User Manual

ETU08

8 E1 Inverse Multiplexer

CTC UNION TECHNOLOGIES CO., LTD.

LEGAL
The information in this publication has been carefully checked and is believed to be entirely accurate at the time of publication. CTC Union Technologies assumes no responsibility, however, for possible errors or omissions, or for any consequences resulting from the use of the information contained herein. CTC Union Technologies reserves the right to make changes in its products or product specifications with the intent to improve function or design at any time and without notice and is not required to update this documentation to reflect such changes.

CTC Union Technologies makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does CTC Union assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation any consequential or incidental damages.

CTC Union products are not designed, intended, or authorized for use in systems or applications intended to support or sustain life, or for any other application in which the failure of the product could create a situation where personal injury or death may occur. Should the Buyer purchase or use a CTC Union product for any such unintended or unauthorized application, the Buyer shall indemnify and hold CTC Union Technologies and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, expenses, and reasonable attorney fees arising out of, either directly or indirectly, any claim of personal injury or death that may be associated with such unintended or unauthorized use, even if such claim alleges that CTC Union Technologies was negligent regarding the design or manufacture of said product.

TRADEMARKS
Microsoft is a registered trademark of Microsoft Corp.
HyperTerminal™ is a registered trademark of Hilgraeve Inc.

WARNING:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference in which case the user will be required to correct the interference at his own expense. NOTICE: (1) The changes or modifications not expressively approved by the party responsible for compliance could void the user's authority to operate the equipment. (2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

CISPR PUB.22 Class A COMPLIANCE:
This device complies with EMC directive of the European Community and meets or exceeds the following technical standard. EN 55022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment. This device complies with CISPR Class A.

WARNING:
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CE NOTICE
Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards: EN 55022:1994/A1:1995/A2:1997 Class A and EN61000-3-2:1995, EN61000-3-3:1995 and EN50082-1:1997

CTC Union Technologies Co., Ltd.
Far Eastern Vienna Technology Center (Neihu Technology Park)
8F, No. 60, Zhouzi St.
Neihu, Taipei, 114
Taiwan
Phone: +886-2-2659-1021
FAX: +886-2-2799-1355

ETU08

8 E1 Inverse Multiplexer

User Manual
Version 0.9a Draft Aug 2008

This manual supports the following models:
ETU08-8E/AC
ETU08-8E/DC

This document is the first official release manual. Please check CTC Union's website for any updated manual or contact us by E-mail at info@ctcu.com. Please address any comments for improving this manual or to point out omissions or errors to marketing@ctcu.com. Thank you.

1. Overview **7**
1.1 Features 7
1.2 Application 8
2 Setting Up **9**
2.1 Front Panel 9
2.2 LED Indication 9
2.3 Loopback Control 10
2.4 Rear Panel 10
3 Configuration **11**
3.1 Navigating the Menu 11
3.2 Menu Trees 11
3.3 Menu Screen Convention 16
3.3.1 Log Screen 16
3.3.2 Menu screen 17
3.3.3 Main Menu 18
3.4 Configuring System Parameters 19
3.4.1 Configuring System Time 20
3.4.2 Configuring System Description 20
3.4.3 Configuring SNTP 20
3.4.4 Configuring LAN Management Interface 21
3.4.5 Configuring SNMP 22
3.4.6 Configuring EOC 24
3.4.7 Configuring System Application Parameters 25
3.4.8 Setting User Password 25
3.5 Configuring Interfaces 26
3.5.1 Configuring E1 Interfaces 26
3.5.2 Configuring 10/100Base-Tx Port 27
3.5.3 Configuring E1 Switch Parameters 28
3.6 Configuring Alarm Threshold 29
3.7 Save & Factory Default 29
4 Monitoring Performance & Alarm **31**
4.1 Displaying E1 Statistics 31
4.2 Displaying Current 15Min Performance 32
4.3 Displaying Current 24 Hour Performance 33
4.4 Displaying History 15 Minute Performance 33
4.5 Displaying History 24 Hour Performance 34
4.6 Clearing History 15 Min data 34
4.7 Clearing History 24 Hour data 34
4.10 Displaying Alarm 35
4.11 Displaying Current Alarm 35
4.12 Displaying Historical Alarm 36
5 Maintenance **37**
5.1 Performing Loop Back 37
5.3 Updating Firmware 40
5.4 Displaying Identity Information 41
6 Configuring with Web **43**
6.1 Login 43
6.2 Configuration 44
6.2.1 System 44
6.2.2 Interface 49
6.2.3 Alarm Threshold 52
6.2.4 Save & Reset 53
6.3 Performance & Alarm 54
6.3.1 Performance 54
6.3.2 Alarm 55
6.4 Maintenance 57
6.4.1 Test 57
6.4.2 Update (Recommended) 59

Appendix A 61
A.1 E1 Signal Pin-out 61
A.2 RJ-45 wire numbering 61

1. Introduction

ETU08 is a 4/8 E1 inverse multiplexer enabling the transport of high speed data, MPEG-2 or broadband services over 1 to 4/8 E1 links. Using a proprietary E1 frame alignment for splitting a single 8M/16M data over 1 to 4/8 E1 links or vice versa, the ETU08 identifies and aligns this inverse data channel dynamically with minimal delay variation among the E1 links.

10/100Base-TX interfaces make ETU08 an ideal solution for high speed broadband application. The inverse aggregation bandwidth is scalable as Nx1.984 Mbps [N=1–4/8] with maximum payload bandwidth at 7.936 Mbps or 15.872Mbps.

It can be managed locally by connecting a VT-100 emulated PC to the console port or remotely through Telnet/SNMP/Web server access. Administration, Maintenance, and Provisioning (OAM&P) are provisioned with the use of 12Kbps embedded operation channel (EOC) that runs through the inverse link. Configured with individual IP address for local and remote unit, ETU08 is accessible to the Internet users who are managing the units from a remote location.

To ensure operation continuity and accommodate field requirement, ETU08 offers choices of AC and DC power.

1.1 Features

- Connect one high speed broadband over 1-4/8 E1 links
- Automatically scale up and down E1 links according to link availability.
- Support data rates 1.984XN[1-4/8]Mbps.
- Use 12Kbps EOC channel for remote configuration and OAM&P.
- Comply with ITU-T G.703 and support PCM31C format.
- Allow a maximum delay of 64 ms among E1 links.

Specifications

Inverse multiplexing	
E1 alignment:	Proprietary method by labeling E1 frames. E1 frame is labeled from 1-512 using SA7-SA8 spare bits
Maximal delay:	64 ms[512 frame buffer]
Data rate:	Nx1.984Mbps,N=1-4/8, 12Kbps EOC channel is embedded in SA4-SA6 spare bits.

E1 Interface	
Standard:	ITU-T G.703, G.704,
No. of E1 output:	1–4/8,scaled down automatically per E1 alarms
Line rate:	2048 Kbps +/- 50 ppm
Line Code:	HDB3
Framing:	PCM31C
Pulse shape:	Meet ITU-T G.703
Impedance:	Balanced 120Ω+/-5% resistive or unbalanced 75Ω+/-5% resistive, software programmable
Connection Type:	RJ-45 or BNC

LAN Interface	
Standard:	IEEE 802.3 / IEEE 802.3u
Interface:	IEEE 802.3/802.3u 10/100 Base-T
Data Rate:	N x1.984Mbps[N=1-4/8]
Bridging Capability:	Complied with IEEE 802.1d transparent bridge
	Supports up to 128 MAC addresses learning
	Supports bridge filtering function
Connection Type:	RJ-45 2ports
Ethernet packet size: support	maximin packet size as 1518,1522,1536and 1912 bytes.

Power	
AC [Default], DC is optional	
AC:	90 - 260 V @ 50-60 Hz, 0.2A
DC:	-36~ -72 V,0.2A

Network management	
CID interface:	VT-100/RS-232C/Telnet/SNMP/Web server
EOC channel:	12Kbps
SNMP:	meet IETF RFC1157,1212 and 2495@10/100Based Tx with RJ-45 connector

Alarm and Performance
Meet G.821 and G.826 for E1 interface
Form C dry relay alarm output

Maintenance
Loopback: LL,RL and NL(local payload loopback)

Mechanical	
Desktop (WxHxD)	29.1 cm x 51cm x 17.8 cm
Rackmount	19 inches wide and 1U height

Ordering Information:

ETU08-8E -4E /AC /DC

/AC:	Specify power source.	
/DC	*	AC
	*	DC
-xE:	Specify E1 number.	
	4	4E1
	8	8E1

1.2 Application

.

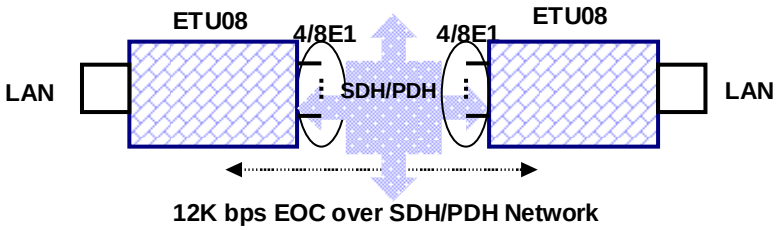


Figure A.1: Typical ETU08 application

2. Overview

- Provides a detailed description of the Front Panel controls, indicators and their functions and connections of the Rear Panel.
- Lists the configuration parameters for CID port.
- Explains notations of command syntax and shows valid entry.

2.1 Front Panel

Figures 2.1 illustrates the Front Panel of typical ETU08 unit with LAN and E1 status indicators, loop back pushbuttons, Telnet/SNMP and CID management interfaces.

Appendix A specifies the ETU08 connector pin assignments.

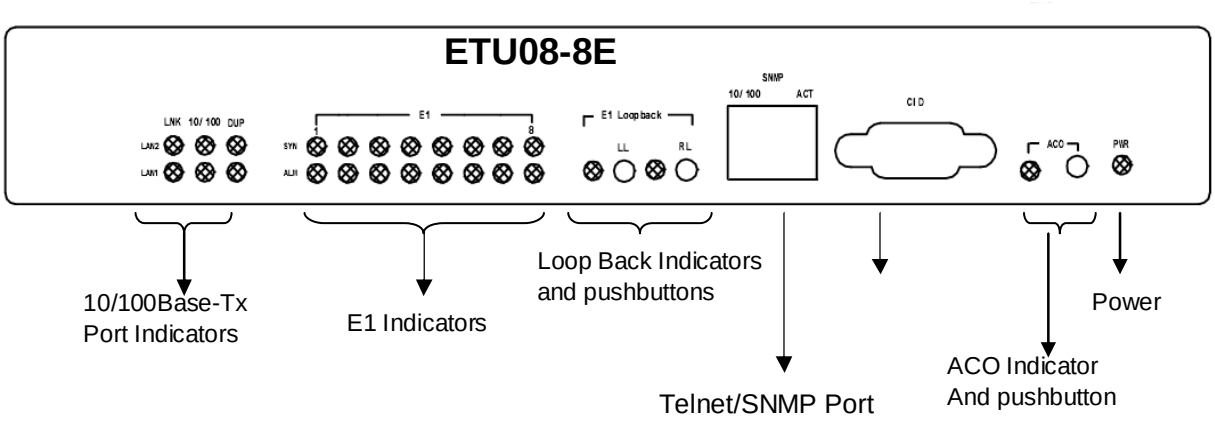


Figure 2.1 : Front Panel of ETU08

2.2 LED Indication

ETU08,by interface category, contains purpose-driven LEDs for illustrating the Configuration and Operational status of the unit. Table 2.1 list the function for these LED.

Table 2.1: ETU08 LEDs Indication

LED	Color	Status	Function
LNK	Green	ON	LAN port is connected to an external device.
10/100	Green	ON	LAN port is working at 100M bps
		OFF	LAN port is working at 10M bps
DUP	Green	ON	LAN port is working in full duplex mode
		OFF	LAN port is working in half duplex mode
SYN	Green	ON	E1 link is synchronized.
ALM	Red	ON	E1 link has LOS, AIS or LOF occurred.
		Blinking 0.5s OFF, 0.5s ON	CRC-4 error is present at E1 port.
		Blinking 3s OFF, 0.5s ON	Active alarm is present at the remote E1 port.
ACO	Yellow	ON	Audio alarm of the alarm happened before is relieved.
PWR	Green	ON	Power is on.
Note that the SYN and ALM indicators will both turn OFF while the specific E1 port is configured to un-used.			
ETU08 indicates the most E1 severe event only while multiple events occurred simultaneously. The severity			
is LOS, AIS, LOF, CRC-4, and RAI with LOS the highest.			

2.3 Loopback Control

There are varieties of Loop Back(LB) designed in ETU08 enabling the diagnostics performed at E1 ports or user DTE interfaces as illustrated in Figure 2.2 below.

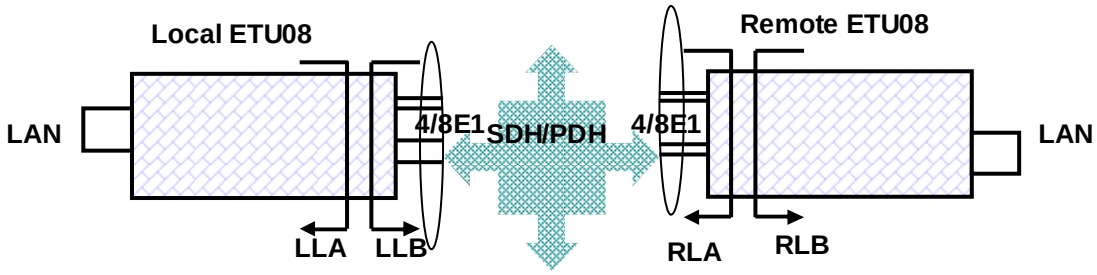


Figure 2.2 Employing multiple points of loop back

			Table 2.2: Loopback performing at use DTE or E1 ports
	Choice		**Description**
	LLA		Loop the signal locally at E1interface toward DTE direction.
	LLB		Loop the signal locally at E1 interface toward network direction.
	RLA		Loop the signal remotely at E1 interface toward network direction.
	RLB		Loop the signal remotely at E1 interface toward DTE direction.
Note that the Point of Loop Back (POL) is specified in the figure above.			
When you initiate this test, the status of loop back for all ports are shown in real time basis.			

Table 2.3: ETU08 LEDs Indication and Button Control				
Item	**LED/Button**	**Color**	**LED display**	**Function**
LL (E1)	Button			Toggle this button to start and stop LL.A
LL (E1)	LED	Yellow	ON	LLA is in progress.
			Blinking 0.5s OFF, 0.5s ON	RLB is in progress.
RL (E1)	Button			Toggle this button to start and stop RLA.
RL (E1)	LED	Yellow	ON	RLA is in progress.
			Blinking 0.5s OFF, 0.5s ON	RLB is in progress

2.4 Rear Panel

Figure 2.3 illustrates the Rear Panel of typical ETU08-8E unit with unbalanced and balance E1, LAN port, and AC/DC power connectors.

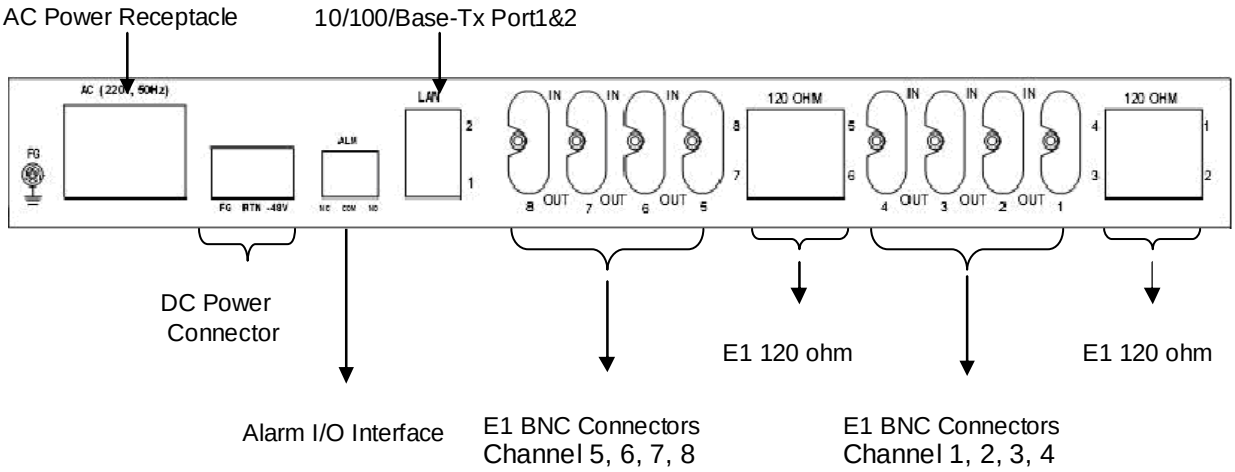

AC Power Receptacle
10/100/Base-Tx Port1&2
DC Power Connector
Alarm I/O Interface
E1 BNC Connectors Channel 5, 6, 7, 8
E1 120 ohm
E1 BNC Connectors Channel 1, 2, 3, 4
E1 120 ohm

Figure 2.3 Rear Panel of ETU08(8E1)

3. Provisioning

3.1 Navigating the Menu

Management interfaces

If required, ETU08 can be re-configured. The ETU08 Configuration, Monitoring, and Diagnostic operation are performed using any of the following methods:

- ASCII terminal connected to Console port
- An SNMP-based management system.
- Telnet accessed LAN port

Configuring the Console Port

ETU08 includes a V.24/RS-232 asynchronous DCE port, designated Console and terminated in a 9-pin D-type female connector. This Console port continuously monitors the incoming data stream and immediately responds to any input string received through this port.
The ETU08 Console port can be configured to communicate at the following setting:

■ Terminal Mode:	VT-100
■ Baud rate:	38400 bps
■ Data bits:	8
■ Parity:	None
■ Stop bits:	1
■ Flow Control:	None

3.2 Menu Trees

The menu structure for ETU08 is a multi-layered menu tree. Each menu level consists of menu elements, which may be either a main menu or a sub-menu item. Use these menu trees as a reference while configuring parameters, collecting event statistics and performing diagnostics.

A 5 layers Menu Tree for the unit is illustrated in Figure 3.1 through Figure 3.4.

The first 3 hierarchy

Viewing from Main Menu, the second layer " 1. Configuration, 2.Performance Monitoring & Alarm, and 3. Maintenance " and all its tributary are shown in Figure 3.1.

Figure 3.1: The first 3 Level Menu Tree

- Main Menu
  - >> 1. Configuration
    - >> System
    - >> Interface
    - >> Alarm Threshold
    - >> Factory Default
    - >> Save
  - >> 2. PM&Alarm
    - >> Performance
    - >> Alarm
  - >> 3. Maintenance
    - >> Loopback Test
    - >> PRBS Test
    - >> Firmware Update
    - >> Inventory

Figure 3.2: Configuration and its tributary I

Main Menu						
>>	Configuration					
	>>	1. System				
		>>	1. Time & Date			
		>>	2. SNTP Configure			
				>>	1. SNTP State	
				>>	2. SNTP Server IP	
		>>	3. LAN Configure			
				>>	1. IP address	
				>>	2. Subnet Mask	
				>>	3. Gateway Addr	
				>>	4.Mac Addr	
		>>	4. SNMP Configure			
				>>	1. Community CFG	Read Com; Write Com; Trap Com
				>>	2. Trap CFG	TrapIP Addr;Port
		>>	5. EOC Configure			
				>>	1. Local IP	
				>>	2. Remote IP	
		>>	6. Route Configure			
				>>	Add Route	
				>>	Delete Route	
		>>	7. APP Configure			
				>>	1.Rate Unit	E1
				>>	2.Data Unit	
				>>	3.Clock Mode	Recovery; Crystal
				>>	4.Max Packet Length	1536; 1552
				>>	5.InBand Configure State	Disabled; Enabled
		>>	8. Password Change			
	>>	2. Interface				
		>>	1. Channel (1~4 or 1~8)			
				>>	1. Channel State	:Equipped; N0_Equipped
				>>	2. Channel Use	: Used; Unused
				>>	3. Frame Type	: PCM31C
				>>	4. Impedance	: 120 ohm; 75 ohm

Figure 3.3: Configuration and its tributary II

| Main Menu | | |

Figure 3.4: PM&Alarm, Maintenenace and its tributary

- Main Menu
  - >> 2. PM&Alarm
    - >> 1.Performance
      - >> 1. Channel(1~4 or 1~8)
        - >> 1. Current 15min.
        - >> 2. Current 24hour
        - >> 3. History 15min.
        - >> 4. History 24hour
        - >> 5. His 15min Clear
        - >> 6. His 24hour Clear
    - >> 2. Alarm
      - >> 1. Current Alarm
      - >> 2. History Alarm
      - >> 3. History Clear
  - >> 3. Maintenance
    - >> 1. Loopback Test
      - >> 1. Type : LLA;RLA;
      - >> 2. Channel Set :Channel 1~4 or 1~8
      - >> 3. Start Test : Start; Stop
    - >> 2. PRBS Test
      - >> 1. Channel Set :Channel 1~4 or 1~8
      - >> 2. Start : Start; Stop
    - >> 3. Firmware Update
      - >> 1. Host IP
      - >> 2. Start Update
      - >> 3. Reset
    - >> 4. Inventory
      - >> 1. Product
      - >> 2. S/W Version
      - >> 3. H/W Version
      - >> 4. Vendor
      - >> 5. Manf. Date

3.3 Menu Screen Convention

3.3.1 Log Screen

If you choose to access system with Console Port, you will firstly get the Log Screen illustrated below. Both for local and remote,

- Default user name: **Local**
- Default password: **admin**

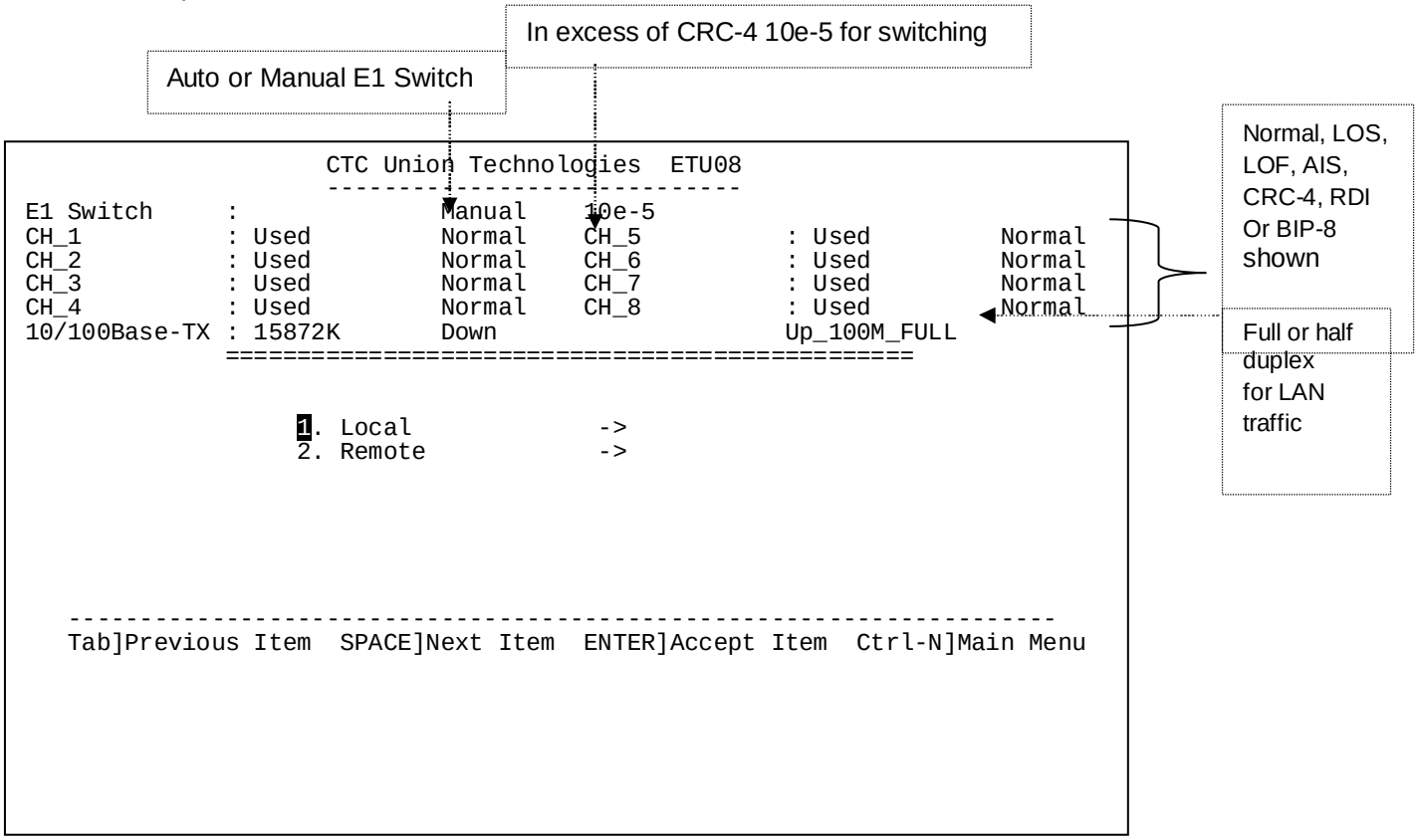

In excess of CRC-4 10e-5 for switching
Auto or Manual E1 Switch
Normal, LOS, LOF, AIS, CRC-4, RDI Or BIP-8 shown
Full or half duplex for LAN traffic
CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used Normal CH_5 : Used Normal
CH_2 : Used Normal CH_6 : Used Normal
CH_3 : Used Normal CH_7 : Used Normal
CH_4 : Used Normal CH_8 : Used Normal
10/100Base-TX : 15872K Down Up_100M_FULL
1. Local ->
2. Remote ->
Tab]Previous Item SPACE]Next Item ENTER]Accept Item Ctrl-N]Main Menu

Figure 3.5 Logon Screen

3.3.2 Menu screen

After log in the system, the Menu Screen will show as below. It always contains five user operating areas which are **Identity Information**, **Real Time Status, Operating Field, Input Field, and Function Keys.**

There are three main menus on Menu Screen including **Configure** (Details see Section 3.4~3.7), **PM & Alarm** (Details see Chapter 4), and **Maintenance** (Details see Chapter 5).

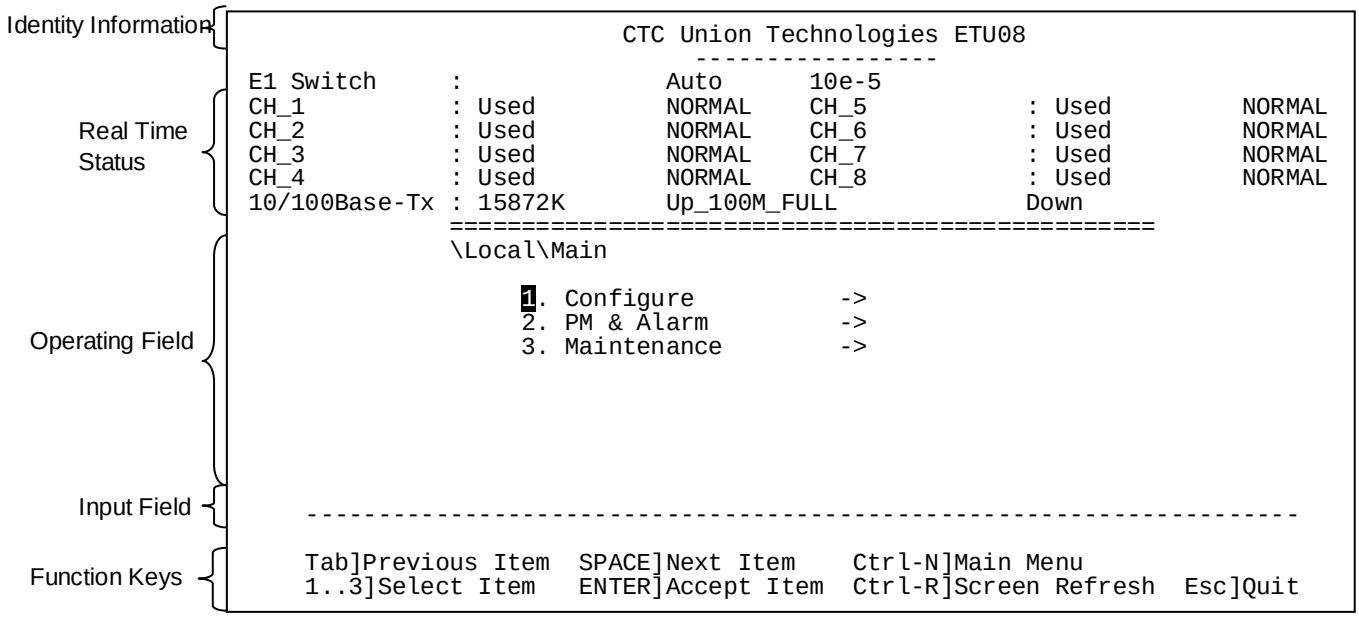

Identity Information
Real Time Status
Operating Field
Input Field
Function Keys
CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Down
\Local\Main
1. Configure ->
2. PM & Alarm ->
3. Maintenance ->
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..3]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.6 Main Menu Screen

Table 3.3: Five user operating areas of the Menu Screen.	
Identity Information:	The one-line top most area that shows Name of Vendor and Product Model.
Real Time Status:	This is the multi-line area above the double dotted line that provides user interface status and alarm message.
Operating Field:	This is the area above the single dotted line that provides content of sub-menu and allowed for users' intervention.
Prompt Showing Field:	The area beneath the dotted line that shows options specific to menu or sub-menu items.
Function Keys:	The area right beneath the input field that lists the function keys specific to the operation of the menu currently displayed.

Cursor Operation

To select a specific field or navigate the console screen, refer to the table below for further details. But reverting to main menu or refreshing screen, you need to press " N " or " R " letter key respectively while holding down the Control (Ctrl) key.

Keyboard Command	Description
Tab	Tabs to previous item.
Space	Advances to next item.
Ctrl+ N	Reverts to Main Menu.
1 …N]	Fields enclosed in brackets [ ] offer a list of selections.
Enter	Validates the fields selected.
Ctrl+ R	Refreshes the entire screen.
Esc	Escapes to previous page.

3.3.3 Main Menu

Press “Ctrl+N” to get Main menu illustrated below. It shows both Local and Remote information including LAN IP, Line Rate, LAN port Status, and E1 channel statuses. As shown below, local information is on the left, remote is on the right.

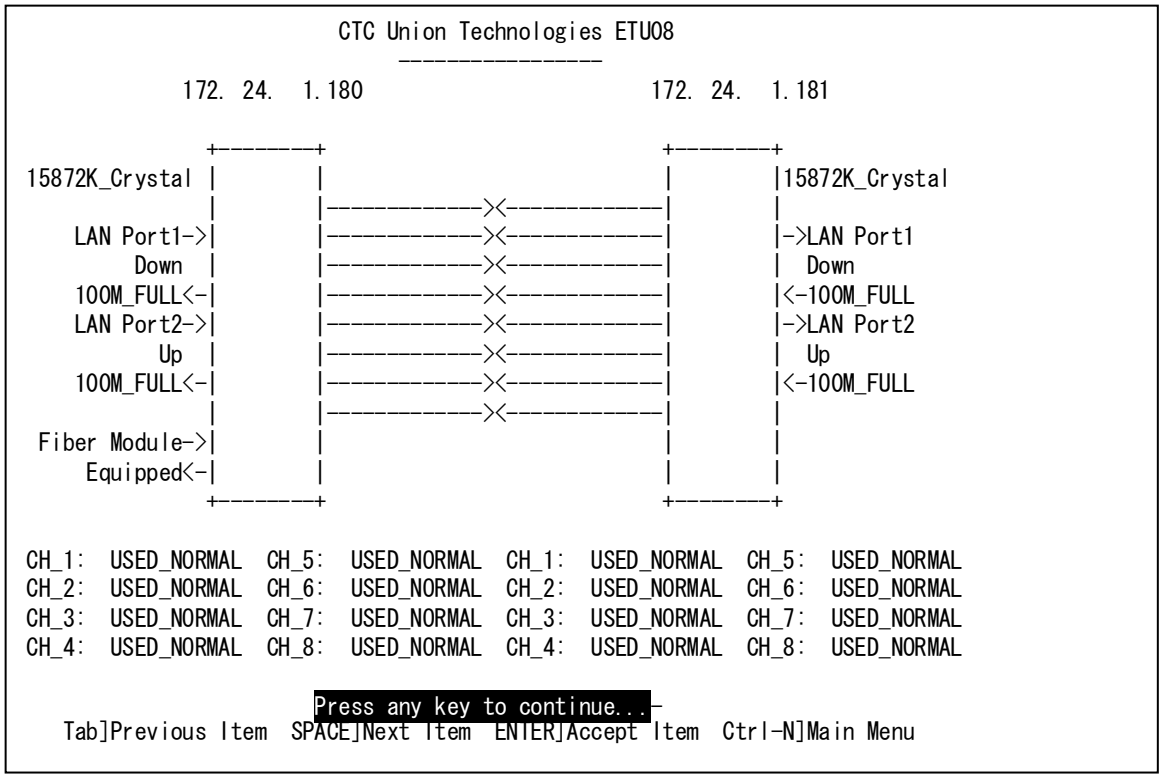


Figure 3.7 Main Status Overview

3.4 Configuring System Parameters

Apply the menu selection sequence: **Local >> Main >> Configure,** to get the Configure Menu illastrated below.

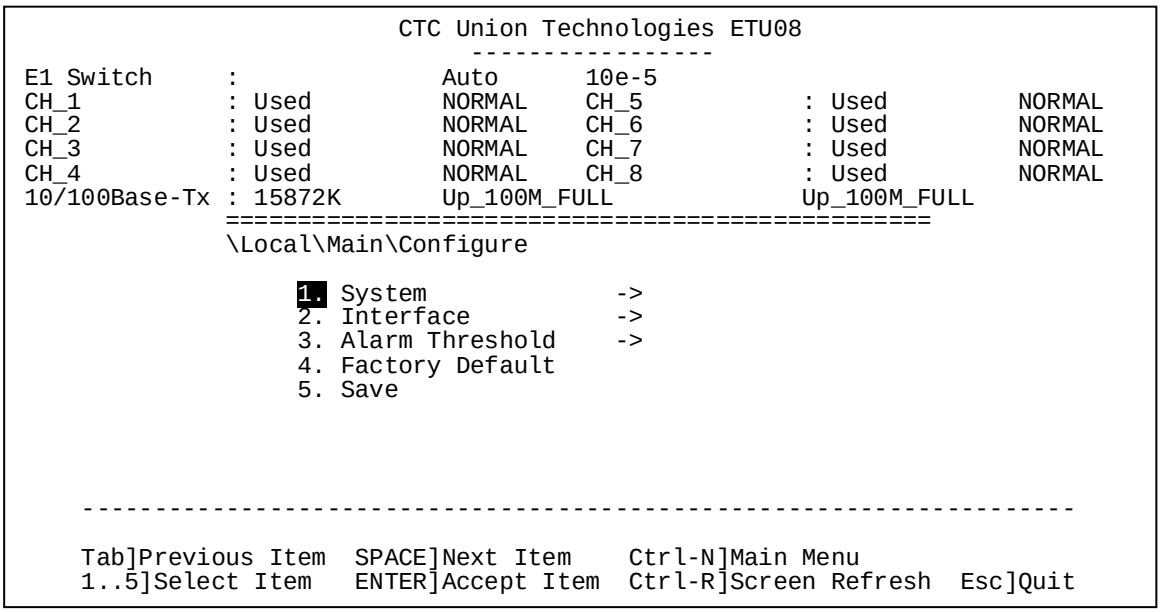

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Up_100M_FULL
\Local\Main\Configure
1. System ->
2. Interface ->
3. Alarm Threshold ->
4. Factory Default
5. Save
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..5]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.8 Configuration Menu

The first item on the Configure Menu is the **System** Menu. This menu allows you to view and set specific ETU08 system parameters.

To access the System Parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System.**

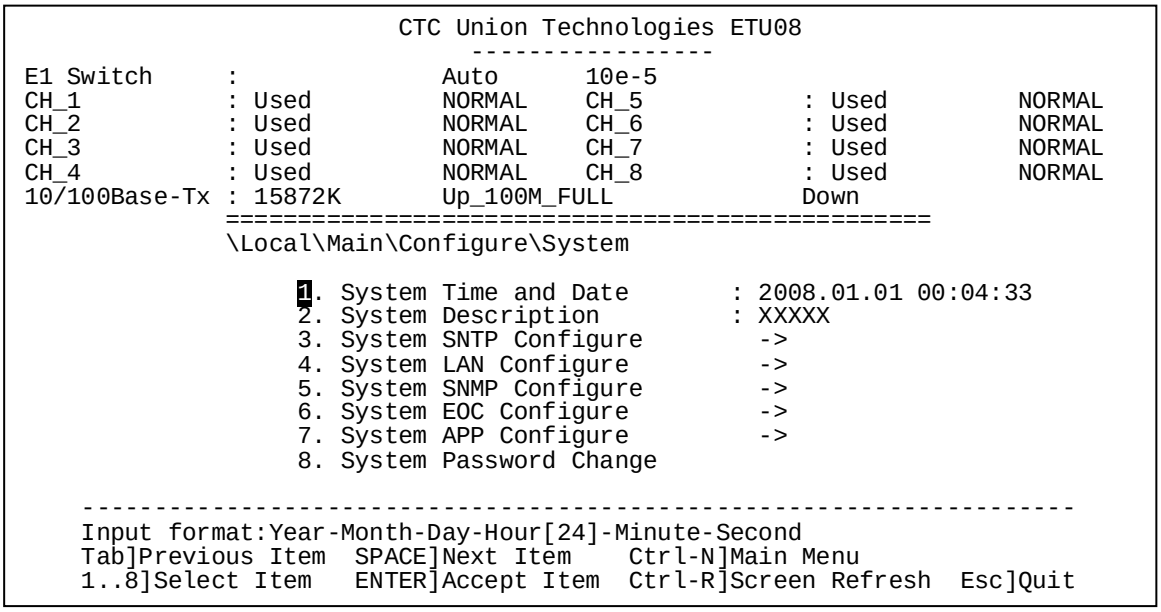

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Down
\Local\Main\Configure\System
1. System Time and Date : 2008.01.01 00:04:33
2. System Description : XXXXX
3. System SNTP Configure ->
4. System LAN Configure ->
5. System SNMP Configure ->
6. System EOC Configure ->
7. System APP Configure ->
8. System Password Change
Input format:Year-Month-Day-Hour[24]-Minute-Second
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..8]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.9 System Menu

There are 8 type of System Parameters required to configure or change as detailed in the following table.

Item	Description
1. System Time	Configure system date and time.
2. System Description	Configure system Description
3. SNTP Configure	Configure SNTP
4. LAN Configure	Configure LAN
5. SNMP Configure	Configure SNMP
6. EOC Configure	Configure EOC
7. APP Configure	Configure common application param
8. User Password	Specify the user password.

3.4.1 Configuring System Time

The System Menu allows you to configure or change the system parameters of the ETU08.
To access these parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System>> System Time and Date.**

- To configure system date and time:
  - Move cursor to **3. System Time and Date** and type in this data in " **Year-Month-Day-Hour[24] Minute-Second** " format.

3.4.2 Configuring System Description

The System Menu allows you to configure or change the system description of the ETU08.
To access this parameter, apply the menu selection sequence: **Local >> Main >> Configure >> System>> System Description.**

- To configure system description:
  You can input alphabetic characters (a..z, A..Z), number (0..9) and hyphen (-), not more than 19 characters

3.4.3 Configuring SNTP

When this parameter Enabled, the ETU08 will retrieve the current time from a remote SNTP Server whose IP address is specified herewith. The System Menu allows you to configure the SNTP Server. To access these parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System >> SNTP_CFG** . (See Figure 3.6)

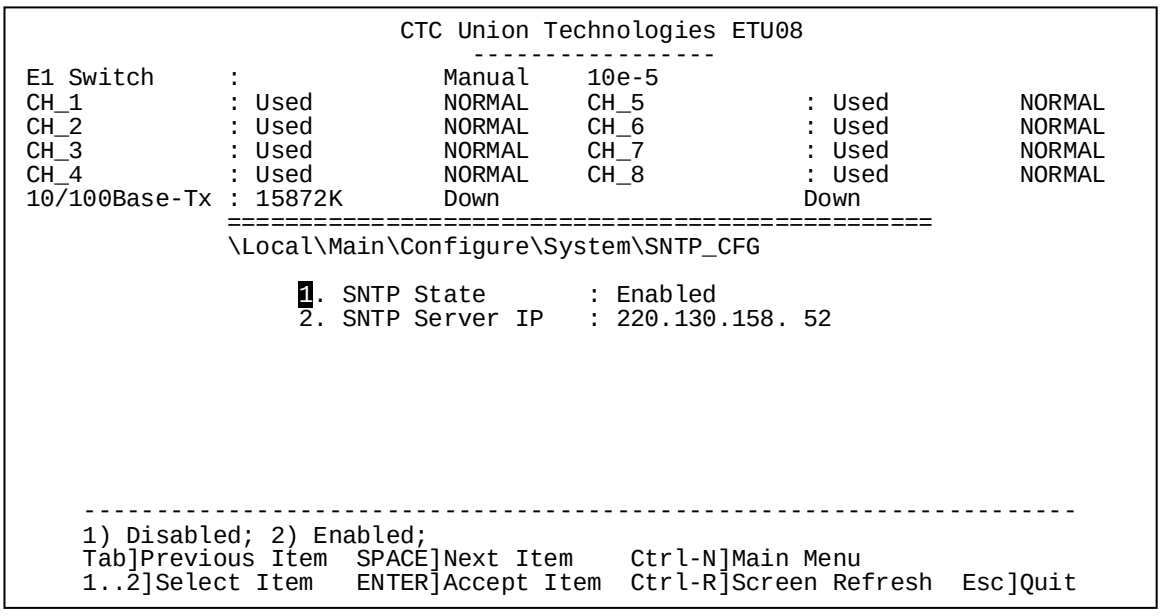

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Down
\Local\Main\Configure\System\SNTP_CFG
1. SNTP State : Enabled
2. SNTP Server IP : 220.130.158. 52
1) Disabled; 2) Enabled;
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..2]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.10 Time Configuration

- To configure the SNTP,
  - Move cursor to **4. System SNTP Configure** from System Menu. The SNTP Menu appears.
  - Select **Enabled** or **Disabled**.
  - In the SNTP Server IP field, type in the IP address in decimal dot format xxxx.xxxx.xxxx.xxxx .

3.4.4 Configuring LAN Management Interface

To access LAN parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System>> LAN_CFG** as shown below.

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :              Auto      10e-5
CH_1          : Used         NORMAL    CH_5           : Used         NORMAL
CH_2          : Used         NORMAL    CH_6           : Used         NORMAL
CH_3          : Used         NORMAL    CH_7           : Used         NORMAL
CH_4          : Used         NORMAL    CH_8           : Used         NORMAL
10/100Base-Tx : 15872K       Up_100M_FULL            Up_100M_FULL
              ================================================
              \Local\Main\Configure\System\LAN_CFG

                   1. IP Address       : 172. 24.  1.180
                   2. Subnet Mask      : 255.255.255.  0
                   3. Gateway Addr     : 172. 24.  1.254
                   4. Mac Addr         : 00:02:ab:90:0b:ef




   ------------------------------------------------------------------------
   Format : xxx.xxx.xxx.xxx
   Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
   1..4]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 3.11 LAN Menu

- To configure the LAN Management Interface,
  - Move cursor to **5. System LAN Configure** of System Menu. The LAN Menu appears.
  - Specify IP address for this LAN interface.
  - Type the proper Subnet Mask.
  - Specify the Next hop IP address in the " Gateway Addr. " field.
  - Read only.The Mac Address of the system.

Note:

- LAN IP should not be in the same sub net with EOC IP.
- The Mac Addr should not be the same as Remote Mac Addr.
- The IP or sub net mask has to be specified in decimal dot format.

3.4.5 Configuring SNMP

SNMP Overview

The Simple Network Management Protocol (SNMP) is an application-level protocol used in network management to gather information from network devices. Each device runs an SNMP Agent that collects management data. A Network Management System (NMS), such as MS- MIB browser professional, HP OpenView , communicates with a SNMP Agent embedded in the ETU08 to obtain specific parameters or variables.

In most case, an SNMP Manager issues a request message (Get) to an SNMP Agent, now namely the ETU08, for retrieving management data. When the ETU08 receives the SNMP Get request, it transmits a response (positive or negative) to the NMS. However, when certain significant events are being trapped by the SNMP Agent, these unsolicited SNMP Trap are sent to the SNMP NMS automatically.

SNMP Gets and Sets

An SNMP "Get" or “Set” allows the management station (NMS) to retrieve an object value from a managed station (ETU08). The ETU08 will execute the “Get” or “Set” request with the in-built SNMP protocol stack.

Traps

Traps are used to inform the NMS of an alert being occurred in the system (example:E1 loss sync). They are sent at the start and completion of an alarm condition. The ETU08 can send traps to the IP addressable destinations (e.g. NMS, or a printer)

To access these SNMP parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System>> SNMP_CFG** as shown below.

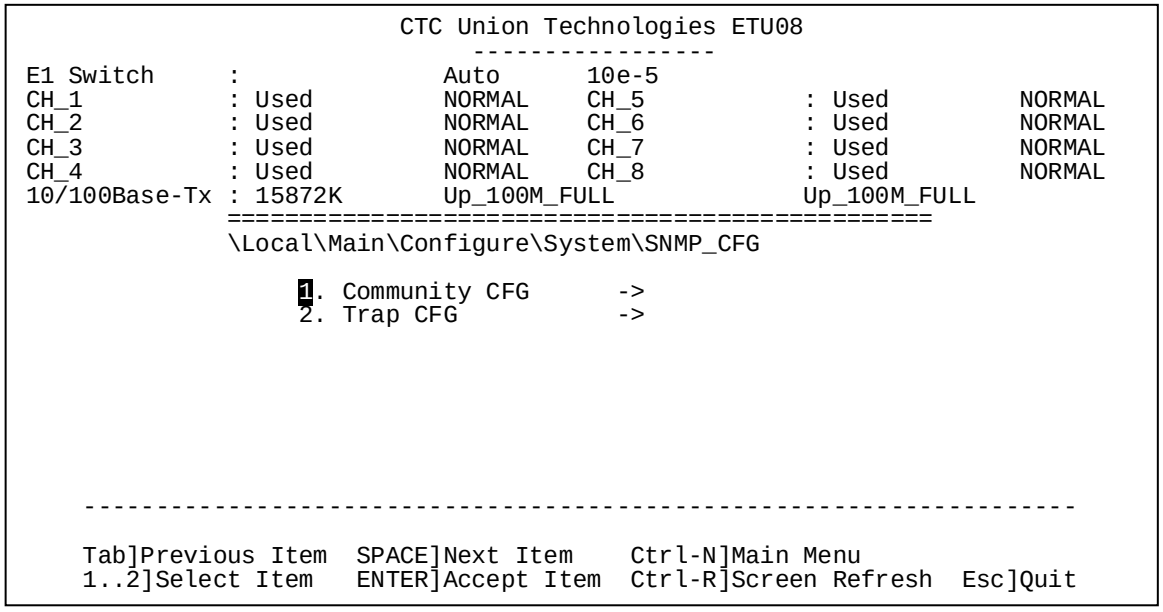

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Up_100M_FULL
\Local\Main\Configure\System\SNMP_CFG
1. Community CFG ->
2. Trap CFG ->
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..2]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.12 SNMP Menu

- To access the SNMP Community and Trap parameters,
  - Move cursor to **6. System SNMP Configure** of System Menu.
    The SNMP Menu appears.
  - Position cursor on **1. Community CFG** and hit “ **Enter** “ key to access the Community Menu. (See Figure 3.13)
  - Position cursor on **2. Trap CFG** and hit “ **Enter** “ key to access the Trap Menu. (See Figure 3.14)

3.4.4.1 Configuring Community Parameter

To access these SNMP parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System>> SNMP_CFG >> Community_CFG** as shown below.

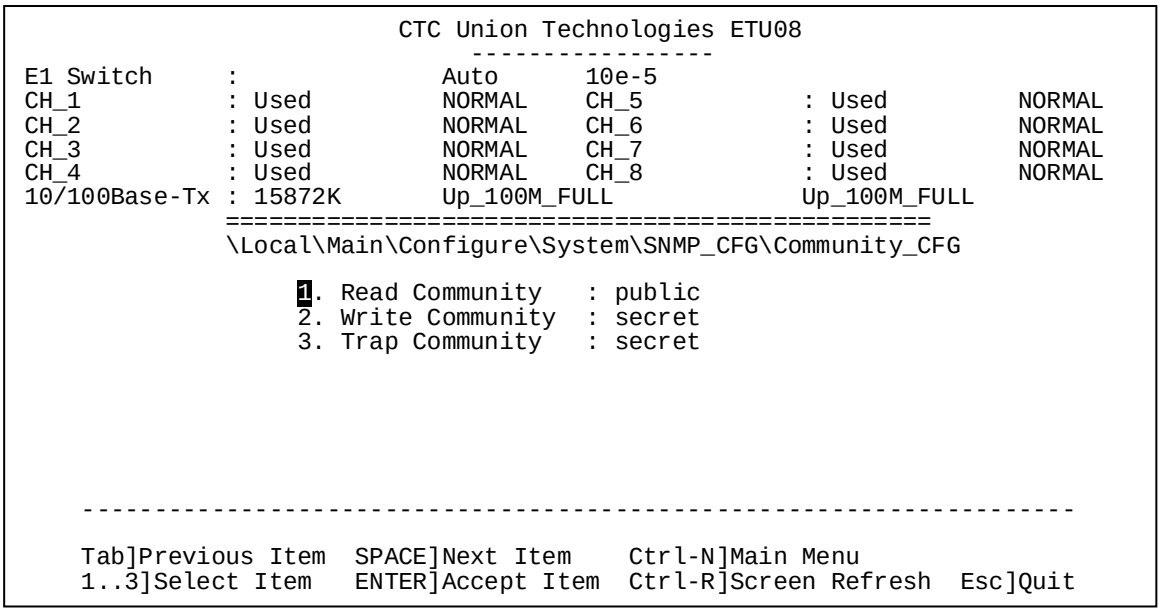

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Up_100M_FULL
\Local\Main\Configure\System\SNMP_CFG\Community_CFG
1. Read Community : public
2. Write Community : secret
3. Trap Community : secret
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..3]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.13 SNMP Community String Setting

There are 3 categories of SNMP Community: Read-Only Community, Read-Write Community and Trap Community.

◆	To access the SNMP Community parameters,	
	■	Move cursor to **1. Read Community** and specify the name of the community with MIB access level of Read Only.
	■	Move cursor to **2. Write Community** and specify the name of the community with MIB access level of Read & Write.
	■	Move cursor to **3. Trap Community** and specify the name of the community to which the Trap will send.

3.4.4.2 Configuring Trap Parameter

To access these Trap parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System>> SNMP_CFG >> Trap_CF** as shown below.

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Auto      10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Up_100M_FULL            Down
              ================================================
              \Local\Main\Configure\System\SNMP_CFG\Trap_CFG

                   1. TrapIP Addr1     : 172. 24.  1.125 : 162
                   2. TrapIP Addr2     : 172. 24.  1.251 : 162
                   3. TrapIP Addr3     : 172. 24.  1.252 : 162









    ---------------------------------------------------------------------
    Format : xxx.xxx.xxx.xxx(IP addr):xxx(Port 1-900)
    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..3]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 3.14 Trap Menu

◆	To access the SNMP Trap parameters,	
	■	Move cursor to **1. Trap IP Address 1** and specify the IP address and TCP port number of the external SNMP Manager 1.
	■	Move cursor to **2. Trap IP Address 2** and specify the IP address and TCP port number of the external SNMP Manager 2.
	■	Move cursor to **3. Trap IP Address 3** and specify the IP address and TCP port number of the external SNMP Manager 3.

3.4.6 Configuring EOC

The System Menu allows you to configure the Embedded Operation Channel management traffic transported between tow two ETU08s. To perform the configuration, apply the menu selection sequence: **Local >> Main >> Configure >> System >> EOC_CFG** as shown below.

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Auto      10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Up_100M_FULL            Down
              ================================================
              \Local\Main\Configure\System\EOC_CFG

                   1. Local IP         : 172. 24.  1.180
                   2. Remote IP        : 172. 24.  1.181









    ---------------------------------------------------------------------
    Format : xxx.xxx.xxx.xxx
    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..2]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 3.15 EOC Menu

◆	To configure the EOC,	
	■	Move cursor to **1. Local IP** and specify the IP address of the local ETU08
	■	Move cursor to **2. Remote IP** and specify the IP address of the remotely connected ETU08.

3.4.7 Configuring System Application Parameters

The System Menu allows you to configure the common application parameters. To perform the configuration, apply the menu selection sequence: **Local >> Main >> Configure >> System >> System APP Configure** as shown below.

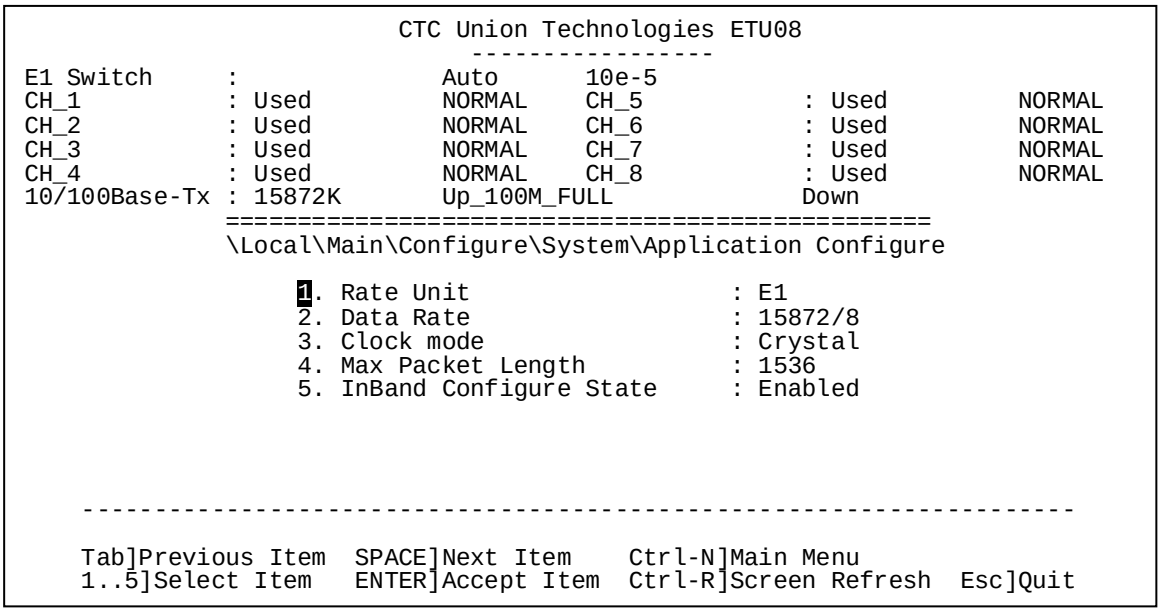

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Up_100M_FULL Down
\Local\Main\Configure\System\Application Configure
1. Rate Unit : E1
2. Data Rate : 15872/8
3. Clock mode : Crystal
4. Max Packet Length : 1536
5. InBand Configure State : Enabled
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..5]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.16 EOC Menu

◆	To configure the application param,	
	■	1. Rate Unit, Read-only, it specifies the unit of rate. E1: 1984K; Time Slot:64K
	■	2. Data Rate, Read-only, it specifies the current data rate.
	■	3. Clock Mode, Read-Write, it specifies the clock mode of lan port. Recovery or Crystal
	■	4. Max Packet Length. Read-Write, it specifies the max packet length of LAN port. 1536 or 1552.
	■	5. InBand Configure State, Read-Write, it specifies the state of InBand Configure. Disabled or Enabled.

3.4.8 Setting User Password

The System Menu allows you to configure or change the user password of the ETU08.
To access these parameters, apply the menu selection sequence: **Local >> Main >> Configure >> System.**

◆ To configure user password:
- ■ Move cursor to **9. System Password Change** and Input the new password .

Note that the default password is “admin”, and the password length must <= 20

3.5 Configuring Interfaces

The Configuration Menu allows you to configure the user DTE interface of ETU08. To perform the configuration, apply the menu selection sequence: **Local >> Main >> Configure >> Interface** as shown.

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :              Auto      10e-5
CH_1          : Used         NORMAL    CH_5           : Used         NORMAL
CH_2          : Used         NORMAL    CH_6           : Used         NORMAL
CH_3          : Used         NORMAL    CH_7           : Used         NORMAL
CH_4          : Used         NORMAL    CH_8           : Used         NORMAL
10/100Base-Tx : 15872K       Up_100M_FULL             Down
              ================================================
              \Local\Main\Configure\Interface

                   1. E1 Channel       : 1 ->
                   2. Fiber Module     : Equipped->
                   3. 10/100Base-Tx      ->
                   4. E1 Switch          ->




    ------------------------------------------------------------------------
    You can input from 1 to 8
    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..4]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 3.17 Interface configuration

3.5.1 Configuring E1 Interfaces

To configure E1 Interface, using Channel 2 as example, apply the menu selection sequence: **Local >> Main >> Configure >> interface >> Channel 2** as shown below.

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :              Auto      10e-5
CH_1          : Used         NORMAL    CH_5           : Used         NORMAL
CH_2          : Used         NORMAL    CH_6           : Used         NORMAL
CH_3          : Used         NORMAL    CH_7           : Used         NORMAL
CH_4          : Used         NORMAL    CH_8           : Used         NORMAL
10/100Base-Tx : 15872K       Up_100M_FULL             Down
              ================================================
              \Local\Main\Configure\Interface\Channel 2

                   1. Channel State    : Equipped
                   2. Channel Use      : Used
                   3. Frame Type       : PCM31C
                   4. Impedance        : 120 Ohm




    ------------------------------------------------------------------------
    1) No_Equipped; 2) Equipped;
    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..4]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 3.18 E1 Interface

◆	To configure Channel 2 to be a E1 Interface,	
	■	Move cursor to 1. Channel State and specify the state to be **Equipped** or
		NO_Equipped.
	■	Move cursor to 2. Channel Used and specify the using state to be **Used** or **Unused**
		Note that if the switch mode of E1 is Auto, you can't modify this param.
	■	3.Frame Type is read-only. In ETU08, it is PCM31C.
	■	Move cursor to 4. Impedance and specify it to be **75 ohm** or **120 ohm**.

3.5.2 Configuring 10/100Base-Tx Port

To configure the 10/100Base-TX Interface, apply the menu selection sequence: **Local >> Main >> Configure >> interface >> 10/100Base-TX Port** as shown below.

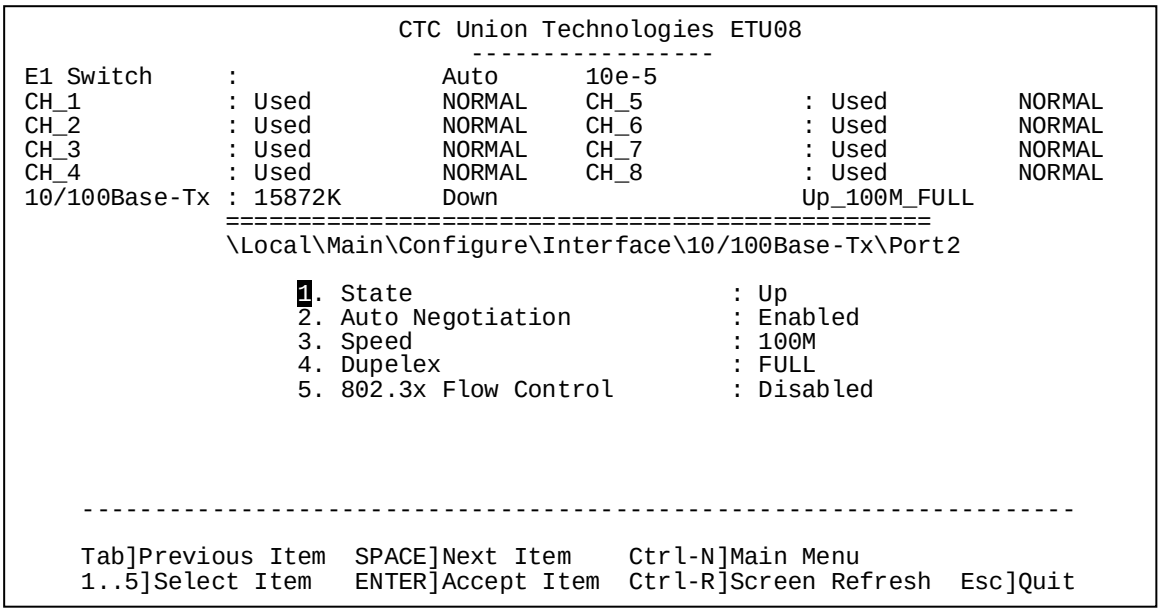

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\Configure\Interface\10/100Base-Tx\Port2
1. State : Up
2. Auto Negotiation : Enabled
3. Speed : 100M
4. Dupelex : FULL
5. 802.3x Flow Control : Disabled
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..5]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.19 10/100Base-TX Port

◆	To configure the 10/100Base-TX Port,	
	■	Read-Only,1. Data Unit E1 **Note that if the switch mode of E1 is Auto, you can't modify this parameters.**
	■	Move cursor to 2. Data Rate and specify it.
	■	Move cursor to 3. Auto Negotiation for 10/100Base-TX Port and set it to **Enabled** or **Disabled**.
	■	Move cursor to 4. Speed and specify it to be **10M** bps or **100M** bps.
	■	Move cursor to 5. Duplex and specify it to be **Full** or **Hal**f duplex transmission.
Note that Flow Control is disabled and not allowed to modify.		
Also, ensure that when Auto Negotiation is configured, you are not allowed to modify the Speed and Duplex mode for LAN data transmission.		

3.5.3 Configuring E1 Switch Parameters

To configure the E1 Switch, apply the menu selection sequence: **Local >> Main >> Configure >> interface >> E1 Switch** as shown below.

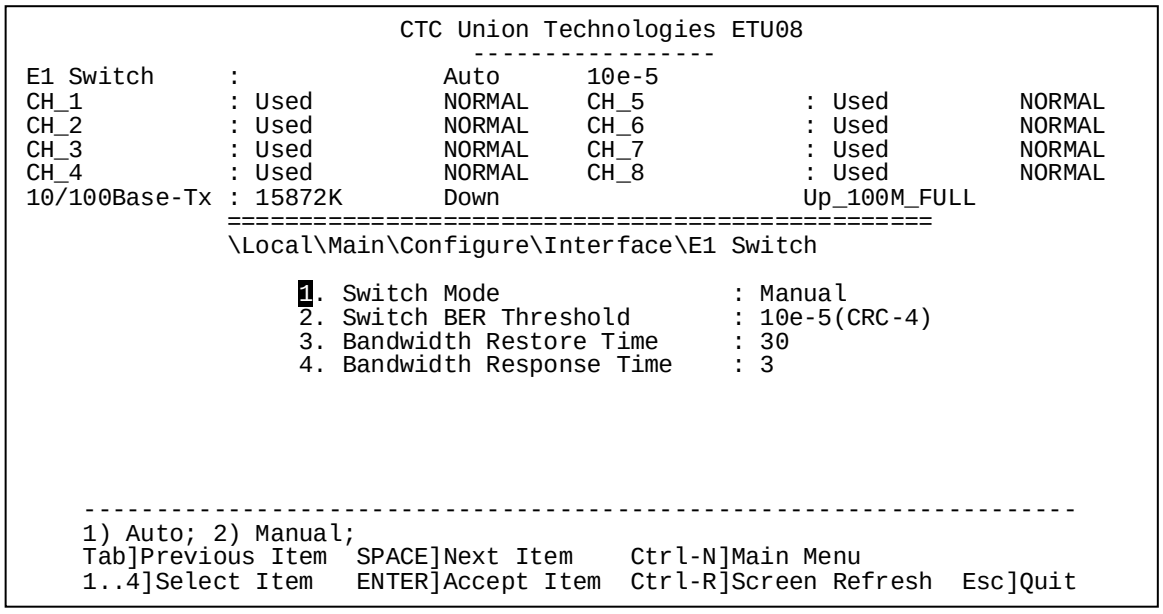

CTC Union Technologies ETU08
E1 Switch : Auto 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\Configure\Interface\E1 Switch
1. Switch Mode : Manual
2. Switch BER Threshold : 10e-5(CRC-4)
3. Bandwidth Restore Time : 30
4. Bandwidth Response Time : 3
1) Auto; 2) Manual;
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..4]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.20 E1 Switch Parameter

◆	To configure the E1 Switch Parameters,	
	■	Move cursor to 1. Switch Mode and specify how the switching will apply. Specify the mode of switching to **Auto** or **Manual**. When you choose **Auto** , the using states of 4 E1 channels and the data rate of DTE are changed by the system.
	■	Move cursor to 2. Switch BER Threshold and specify at which of the following Bit Error Rate **10e-3**;**10e-4**;**10e-5** the E1 switching realizes.
	■	Move cursor to 3. Bandwidth Restore Time and specify it.
	■	Move cursor to 4. Bandwidth Response Time and specify it.
Note that when switching mode manually configured, you are not allowed to modify the BER Threshold and Reserve Time.		

3.6 Configuring Alarm Threshold

To configure Alarm Threshold, apply the menu selection sequence: **Local >> Main >> Configure >> Alarm Threshold** .
To configure Alarm Threshold on Channel, using Channel 3 as example, apply the menu selection sequence: **Local >> Main >> Configure >> Alarm Threshold >> Channel 3** as shown below.

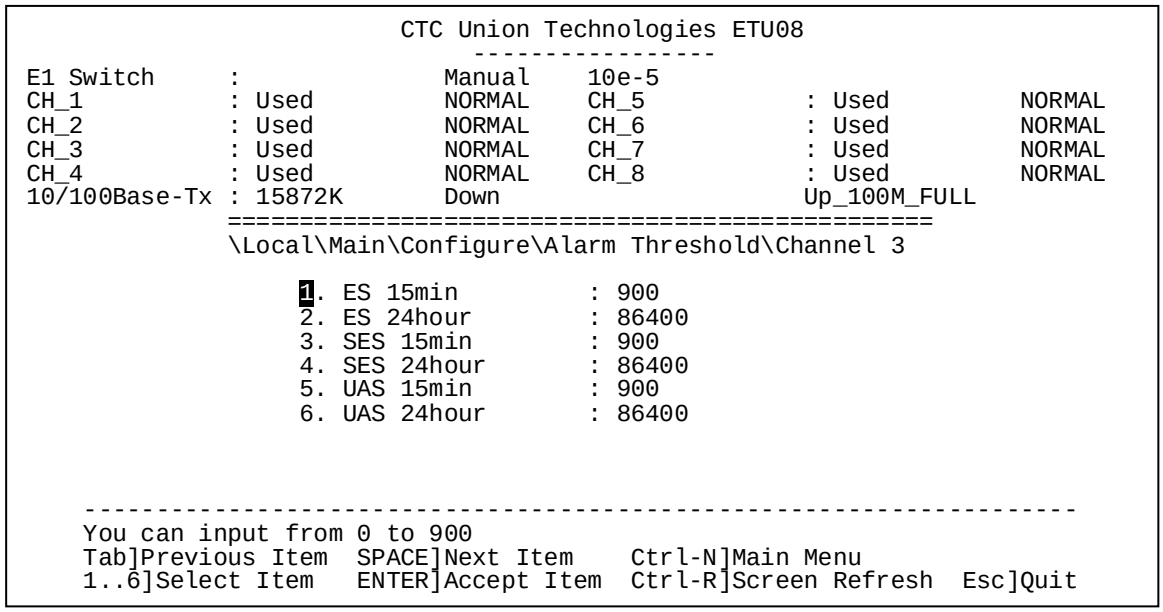

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\Configure\Alarm Threshold\Channel 3
1. ES 15min : 900
2. ES 24hour : 86400
3. SES 15min : 900
4. SES 24hour : 86400
5. UAS 15min : 900
6. UAS 24hour : 86400
You can input from 0 to 900
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..6]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 3.21 Alarm Threshold Menu

To configure the threshold,	
Position the cursor on:	and specify the threshold as detailed below: -
1. ES 15 Min	If the value of Error Second in a particular 15-minute collection interval reaches or exceeds this value, **0 ~ 900**, a trap is generated.
2. ES 24 Hour	If the value of Error Second in this 96x15-minute collection interval reaches or exceeds this value, **0 ~ 86400**, a trap is generated.
3. SES 15 Min	If the value of Severely Error Second in a particular 15-minute collection interval reaches or exceeds this value, **0 ~ 900**, a trap is generated.
4. SES 24 Hour	If the value of Severely Error Second in this 96x15-minute collection interval reaches or exceeds this value, **0 ~ 86400**, a trap is generated.
5. UAS 15 Min	If the value of Unavailable Second in a particular 15-minute collection interval reaches or exceeds this value, **0 ~ 900**, a trap is generated.
6. UAS 24 Hour	If the value of Unavailable Second in a particular 96x 15-minute collection interval reaches or exceeds this value, **0 ~ 86400,** a trap is generated.

3.7 Save & Factory Default

It is highly recommended that you save the configuration once you make the changes to the parameters described above.. Apply the menu selection sequence: **Local >> Main >>Configuration >> Save.** The " Save succeed! Press any key to continue….." prompt message will then display in reverse video.

To restore to default values for setting, selects " 4. Factory Default " from " Configuration " Menu. The " Set default values succeed! Press any key to continue….." prompt message will then display in reverse video.

4. Monitoring Performance & Alarms

4.1 Displaying E1 Statistics

E1 statistics refer to the physical status of the E1 traffic reaching ETU08 from the adjacent E1 device. The E1 statistics parameters comply with the G.703, G.704, G.804, G.706, G.732, and G.823 standards.

E1 statistics are monitored and saved under consecutive intervals. Each interval is lasting for 15 minutes. There are 96 intervals in a day, which represent the last 24 hours.

Whenever a new interval is started, the counters are reset to zero. The old interval shows the total of events that occurred during its 15-minute or 24-hour period.

To display the E1 statistics, apply the menu selection sequence: **Local >> Main >> PM&Alarm >>PM >> Channel 1** as illustrated below.

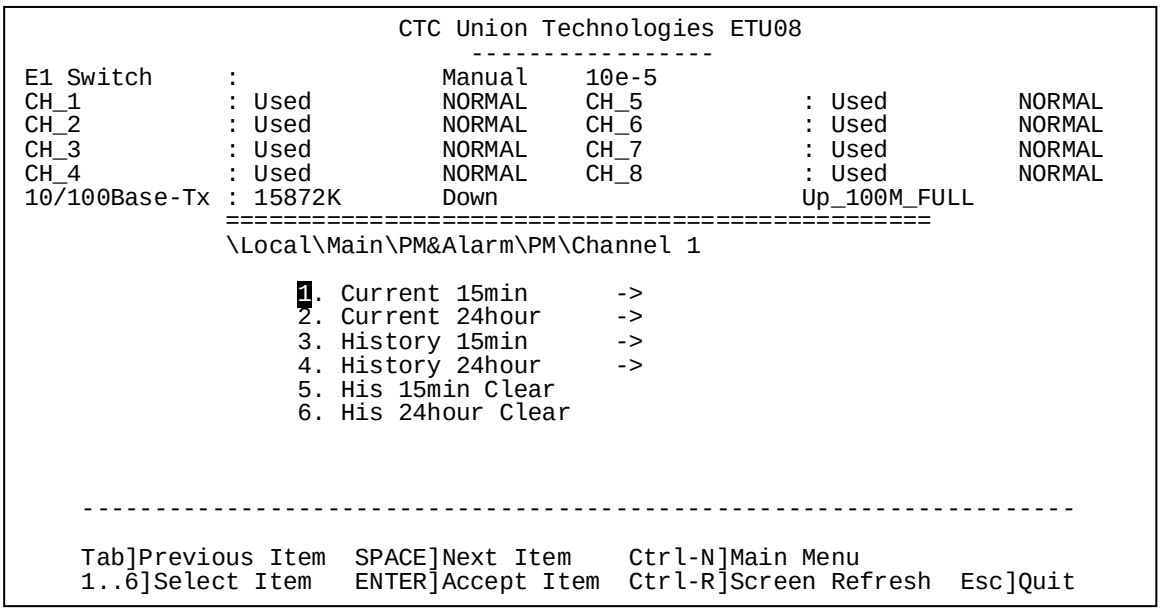

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\PM&Alarm\PM\Channel 1
1. Current 15min ->
2. Current 24hour ->
3. History 15min ->
4. History 24hour ->
5. His 15min Clear
6. His 24hour Clear
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..6]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 4.1 Performance Monitor Menu

Position cursor on:	Specify the items requested:
1. Current 15 Min	Displays current 15-Min. history data.
2. Current 24 Hour	Displays current 24-Hour history data.
3. History 15 Min	Displays all 15-Min. history data.
4. History 24 Hour	Displays all 24-Hour history data.
5. History 15 Min Clear	Clears all 15-Min. history data from the Performance Screen.
6. History 24 Hour Clear	Clears all 24-Hour history data from the Performance Screen.

4.2 Displaying Current 15Min Performance

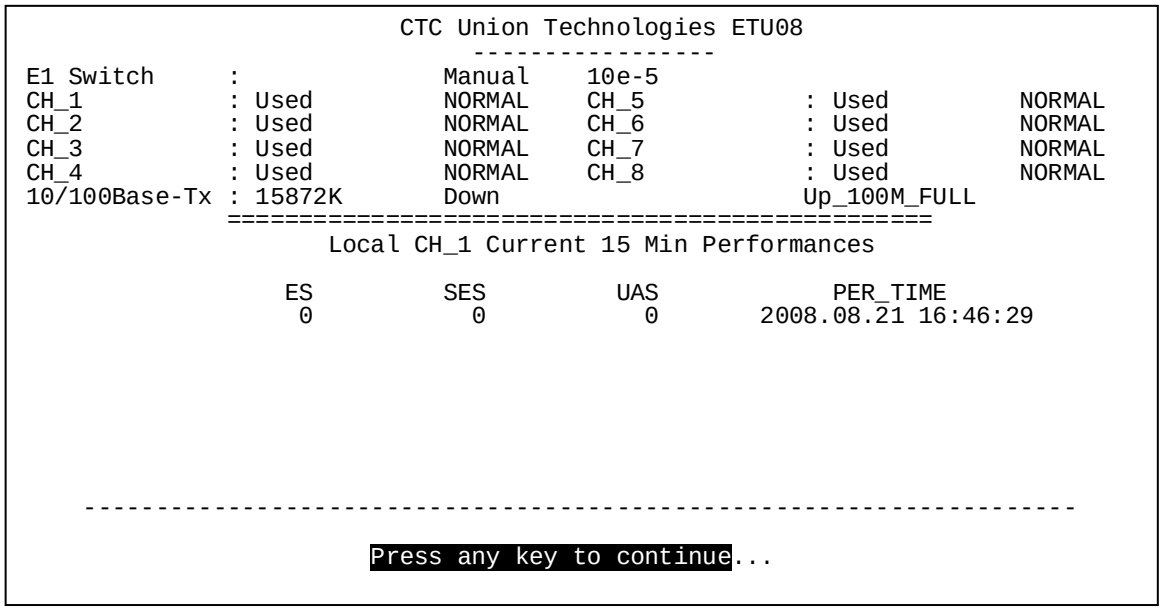

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
Local CH_1 Current 15 Min Performances
ES SES UAS PER_TIME
0 0 0 2008.08.21 16:46:29
Press any key to continue...

Figure 4.2 Current 15M Menu

To display the E1 current 15 minute statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **1. Current 15 Minute**.
■	Hit the " **Enter** " key.
	The Current 15 Minute performance Menu appears. (See Figure 4.2)
Note that the data will be refreshed every 2 seconds.	

Item	Description
1. ES	Count of one second intervals in which at least one of the following occurred at the G.703 input port: CRC-4 errors, LOS, LFA, or received AIS in the current performance collection 15- minutes interval
2. SES	Count of one second intervals in which at least one of the following occurred at the G.703 input port: Error Blocks with 300 or more CRC-4 errors, LOS, LFA, or received AIS in the current performance collection 15- minutes interval
3. UAS	Count of one second intervals in which G.703 input signals were unavailable. Occurs after 10 contiguous SES counts in the current performance collection 15- minutes interval .

4.3 Displaying Current 24 Hour Performance

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Manual    10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Down                    Up_100M_FULL
              ================================================
                    Local CH_1 Current 24 Hour Performances

                  ES          SES          UAS             PER_TIME
                   0            0            0       2008.08.21 16:47:12









   ------------------------------------------------------------------------

                        Press any key to continue...
```

Figure 4.3 Current 24H Menu

To display the E1 current 24 hour statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **2. Current 24 Hour**
■	Hit the " **Enter** " key.
The Current 24 Hour performance Menu appears. (See Figure 4.3)	
Note that the data will be refreshed every 2 seconds.	

4.4 Displaying History 15 Minute Performance

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Manual    10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Down                    Up_100M_FULL
              ================================================
                    Local CH_1 History 15 Min Performances

      ID.         ES          SES          UAS             PER_TIME
      01.          0            0            0       2008.08.21 16:34:57
      02.          0            0            0       2008.01.01 04:49:24
      03.          0            0            0       2008.01.01 04:34:22
      04.          0            0            0       2008.01.01 04:19:21
      05.          0            0            0       2008.01.01 04:04:20
      06.          0            0            0       2008.01.01 03:49:16
      07.          6            6            0       2008.01.01 03:34:15
      08.         16           16           63       2008.01.01 03:19:14
    ------------------------------------------------------------------------

    Tab] Page Up     SPACE] Page Down     Esc] Quit
```

Figure 4.4 History 15M Menu

To display the E1 history 15 minute statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **3. History 15 Minute.**
■	Hit the " **Enter** " key.
	The History 15 Minute performance Menu appears. (See Figure 4.4)

4.5 Displaying History 24 Hour Performance

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :               Manual    10e-5
CH_1          : Used          NORMAL    CH_5           : Used          NORMAL
CH_2          : Used          NORMAL    CH_6           : Used          NORMAL
CH_3          : Used          NORMAL    CH_7           : Used          NORMAL
CH_4          : Used          NORMAL    CH_8           : Used          NORMAL
10/100Base-Tx : 15872K        Down                     Up_100M_FULL
                ============================================
                      Local CH_1 History 24 Hour Performances

      ID.          ES          SES          UAS             PER_TIME
      01.           0            0            0       2008.06.15 19:22:23
      02.           0            0            0       2008.06.05 13:20:16
      03.           0            0            0       2008.06.04 13:18:43
      04.           0            0            0       2008.06.03 13:17:10
      05.           0            0            0       2008.06.02 13:15:30
      06.           0            0            0       2008.06.01 13:13:57
      07.           0            0            0       2008.05.31 13:12:16

    ---------------------------------------------------------------------

                          Press any key to continue...
```

Figure 4.5 History 24H Menu

To display the E1 history 15 minute statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **4. History 24 Hour.**
■	Hit the " **Enter** " key.
	The History 24 Hour performance Menu appears. (See Figure 4.5)

4.6 Clearing History 15 Min data

To clear history 15 minute statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **5. His 15 Min Clear.**
■	Hit the " **Enter** " key.

4.7 Clearing History 24 Hour data

To clear history 24 hour statistics, from Figure 4.1 Performance Monitoring Menu,	
■	Position cursor on **6. His 24 Hour Clear.**
■	Hit the " **Enter** " key.

4.10 Displaying Alarm

To access this feature, apply the menu selection sequence: **Local >> Main >> PM&Alarm>> Alarm**.
The following screen illustrates the Alarm type, Starting and Ending time of the alarm occurrence, for current and event log.

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :               Manual    10e-5
CH_1          : Used          NORMAL    CH_5           : Used          NORMAL
CH_2          : Used          NORMAL    CH_6           : Used          NORMAL
CH_3          : Used          NORMAL    CH_7           : Used          NORMAL
CH_4          : Used          NORMAL    CH_8           : Used          NORMAL
10/100Base-Tx : 15872K        Down                     Up_100M_FULL
              ================================================
              \Local\Main\PM & Alarm\Alarm

                   1. Current Alarm      ->
                   2. History Alarm      ->
                   3. History Clear

    ------------------------------------------------------------------------

    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..3]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 4.8 Alarm Menu

◆ To display or clear the event log,

■	Move cursor to 1. Current Alarm and hit " Enter " key to display the current alarm.
	(See Figure 4.9)
■	Move cursor to 2. History Alarm and hit " Enter " key to display the historical alarm.
	(See Figure 4.10)
■	Move cursor to 3. History Clear and hit " Enter " key to clear all historical alarm.

4.11 Displaying Current Alarm

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :               Manual    10e-5
CH_1          : Used          NORMAL    CH_5           : Used          NORMAL
CH_2          : Used          NORMAL    CH_6           : Used          NORMAL
CH_3          : Used          NORMAL    CH_7           : Used          NORMAL
CH_4          : Used          NORMAL    CH_8           : Used          NORMAL
10/100Base-Tx : 15872K        Down                     Up_100M_FULL
              ================================================
                                  Current Alarm

         ID.          PORT         TYPE              START TIME

    ------------------------------------------------------------------------

    Tab] Page Up     SPACE] Page Down     Esc] Quit
```

Figure 4.9 Current Alarm Menu

Item	Description
1. ID	Indicates the numbering of alarm items
2.Port	Indicates the port at which alarm occurred.
3. Type	Indicates the type of the alarm that occurred.
4. Start time	Indicates the starting date and time of the alarm occurrence.

4.12 Displaying Historical Alarm

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :               Manual    10e-5
CH_1          : Used          NORMAL    CH_5          : Used          NORMAL
CH_2          : Used          NORMAL    CH_6          : Used          NORMAL
CH_3          : Used          NORMAL    CH_7          : Used          NORMAL
CH_4          : Used          NORMAL    CH_8          : Used          NORMAL
10/100Base-Tx : 15872K        Down                    Up_100M_FULL
              ================================================
                                History Alarm

      ID.     PORT    TYPE          START TIME              END TIME
     001.     CH_7    RDI     2008.01.01 00:03:19     2008.01.01 00:03:20
     002.     CH_5    LOF     2008.01.01 00:03:19     2008.01.01 00:03:20
     003.     CH_7    LOS     2008.01.01 00:00:03     2008.01.01 00:03:19
     004.     CH_5    LOS     2008.01.01 00:00:03     2008.01.01 00:03:19
     005.     CH_8    LOS     2008.01.01 00:00:03     2008.01.01 00:03:09
     006.     CH_6    LOS     2008.01.01 00:00:03     2008.01.01 00:03:09
     007.     CH_3    LOS     2008.01.01 00:00:03     2008.01.01 00:03:02
     008.     CH_1    RDI     2008.01.01 00:03:01     2008.01.01 00:03:02
    ------------------------------------------------------------------------

    Tab] Page Up     SPACE] Page Down     Esc] Quit
```

Figure 4.10 History Alarm Menu

Item	Description
1. ID	Indicates the numbering of alarm items
2.Port	Indicates the port at which alarm occurred.
3. Type	Indicates the type of the alarm that occurred.
4. Start time	Indicates the starting date and time of the alarm occurred.
5. End time	Indicates the ending date and time of the alarm

5. Maintenance

This chapter provides information on how to access and execute tests on E1 interfaces, update firmware and retrieve unit's identity information. To perform the maintenance on the ETU08, apply the menu selection sequence: **Local >> Main >> Maintenance** as shown below.

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Manual    10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Down                    Up_100M_FULL
              ================================================
              \Local\Main\Maintenance

                   1. Loopback Test                ->
                   2. PRBS(2e+15 - 1) Test         ->
                   3. Firmware Update              ->
                   4. Inventory                    ->




    ---------------------------------------------------------------------

    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..4]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 5.1 Maintenance Menu

5.1 Performing Loop Back

Diagnostic capabilities designed in ETU08 include E1/DTE local and remote loop back tests for rapid identification of faults. To perform the maintenance on the ETU08, apply the menu selection sequence: **Local >> Main >> Maintenance >> Loopback Test** as shown below.

```
                        CTC Union Technologies ETU08
                             -----------------
E1 Switch     :              Manual    10e-5
CH_1          : Used         NORMAL    CH_5          : Used         NORMAL
CH_2          : Used         NORMAL    CH_6          : Used         NORMAL
CH_3          : Used         NORMAL    CH_7          : Used         NORMAL
CH_4          : Used         NORMAL    CH_8          : Used         NORMAL
10/100Base-Tx : 15872K       Down                    Up_100M_FULL
              ================================================
              \Local\Main\Maintenance\Loopback test

                   1. Type             : LLA
                   2. Channel Set        ->
                   3. Start Test




    ---------------------------------------------------------------------
    1) LLA; 2) RLA;
    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..3]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 5.2 Loop Back Menu

◆	To perform the loop back test,	
	■	Move cursor to **1. Type** and specify the type of loop back in the Input field.
	■	Move cursor to **2. Channel Set** and hit " **Enter** " key to choose the channels which you want to test.
	■	Move cursor to **3. Start test** and hit " **Enter** " key to start the test.
		(The Start test command is now changed to Stop).
	■	To manually stop the test, verify that the cursor is positioned at the Stop command and hit Enter.

Points of loop back, regardless of near / far end or units' interfaces, employed at ETU08 are detailed in the following figure.

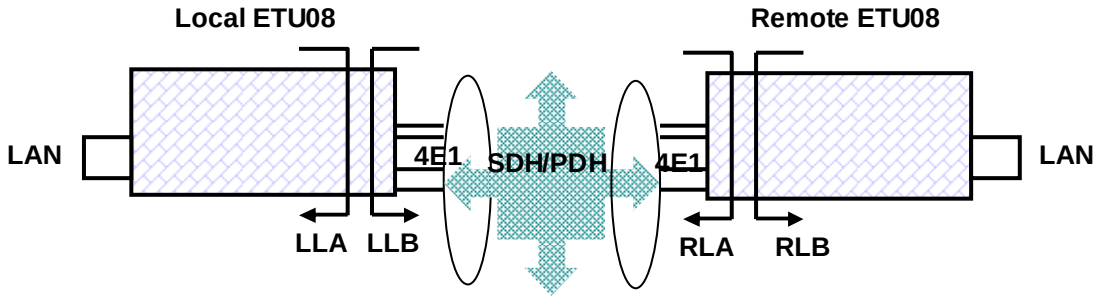


Figure 5.2.1: Employing multiple points of loop

	Choice		Description
	LLA		Loop the signal locally at E1interface toward DTE direction.
	LLB		Loop the signal locally at E1 interface toward network direction.
	RLA		Loop the signal remotely at E1 interface toward network direction.
	RLB		Loop the signal remotely at E1 interface toward DTE direction.
Note that the Point of Loop Back (POL) is specified in the figure above.			
When you initiate this test, the status of loop back for all ports is shown in real time basis.			

5.2 Performing PRBS Test

The ETU08 is available with a test mechanism which utilizes a 15-stage Pseudo-Random Bit Sequence (PRBS) generator and a Bit-Error-Rate detector to validate the LAN link on a per E1 channel basis. This test will disrupt user payload traffic and insert a PRBS for transmitting from near end to far end or vice versa, and display the bit test result at the unit sending **PRBS**.
To perform the maintenance on the ETU08, apply the menu selection sequence: **Local >> Main >> Maintenance >> PRBS Test** as shown below.

```
                          CTC Union Technologies ETU08
                               -----------------
E1 Switch     :               Manual    10e-5
CH_1          : Used          NORMAL    CH_5           : Used          NORMAL
CH_2          : Used          NORMAL    CH_6           : Used          NORMAL
CH_3          : Used          NORMAL    CH_7           : Used          NORMAL
CH_4          : Used          NORMAL    CH_8           : Used          NORMAL
10/100Base-Tx : 15872K        Down                     Up_100M_FULL
              ============================================
              \Local\Main\Maintenance\PRBS test

                   1. Channel Set        ->
                   2. Start Test









    ------------------------------------------------------------------

    Tab]Previous Item  SPACE]Next Item    Ctrl-N]Main Menu
    1..2]Select Item   ENTER]Accept Item  Ctrl-R]Screen Refresh  Esc]Quit
```

Figure 5.2.2 PRBS Menu

◆	To perform the PRBS test,	
	■	Move cursor to **1. Type** and specify the type of loop back in the Input field.
	■	Move cursor to **2. Channel Set** and hit " **Enter** " to choose the channels which you want to test.
	■	Move cursor to **3. Start test** and hit " **Enter** " key to start the test.
		(The Start test command is now changed to Stop).
	■	To manually stop the test, verify that the cursor is positioned at the Stop command and hit Enter.

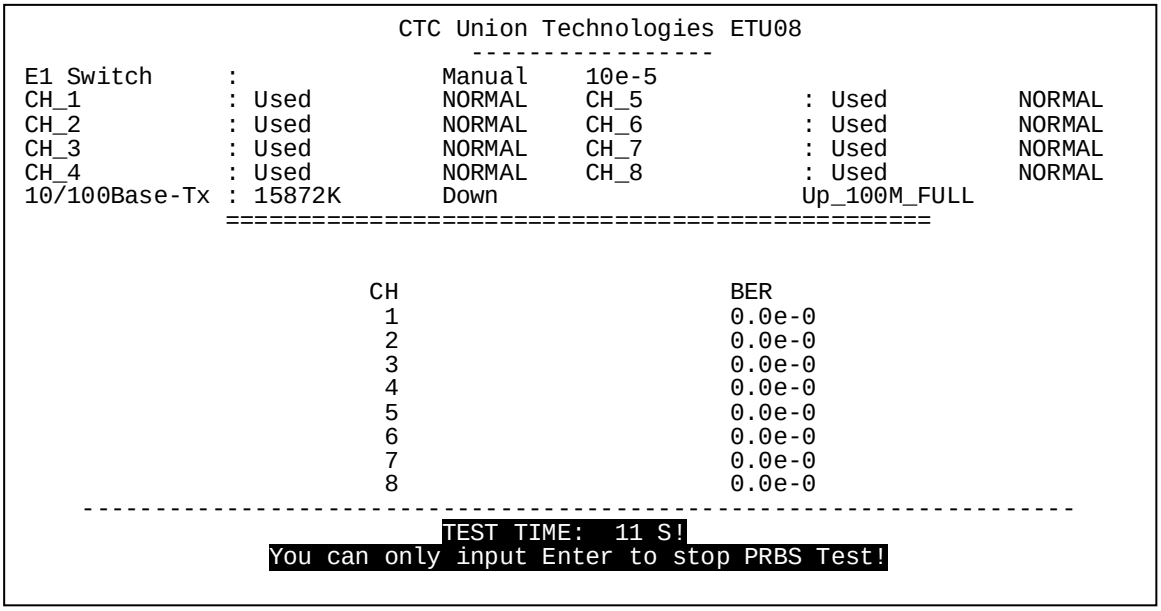

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
CH BER
1 0.0e-0
2 0.0e-0
3 0.0e-0
4 0.0e-0
5 0.0e-0
6 0.0e-0
7 0.0e-0
8 0.0e-0
TEST TIME: 11 S!
You can only input Enter to stop PRBS Test!

Figure 5.3 PRBS Testing

5.3 Updating Firmware

New firmware releases are available as separate files, which are downloaded to ETU08 using the TFTP from the Maintenance Menu. This method is detailed below. However, a safer and more reliable upgrade method is using the serial Console interface and transferring the upgrade image by Xmodem protocol. Using Xmodem is slower but inherently more reliable since it does not depend on network stability.

Update Senario:
PC (running TFTP Server)-------LAN-------(SNMP Port on front panel) ETU08

Update Procedure :

Step 1 : You must configure the TFTP server in your PC (assuming you have TFTP software installed), and specify the directory where new firmware is located.

Note that the new firmware file must be renamed to "app.bin"

Step 2: Apply the menu selection sequence: **Local >> Main >> Maintenance >> Firmware Update** as shown below.

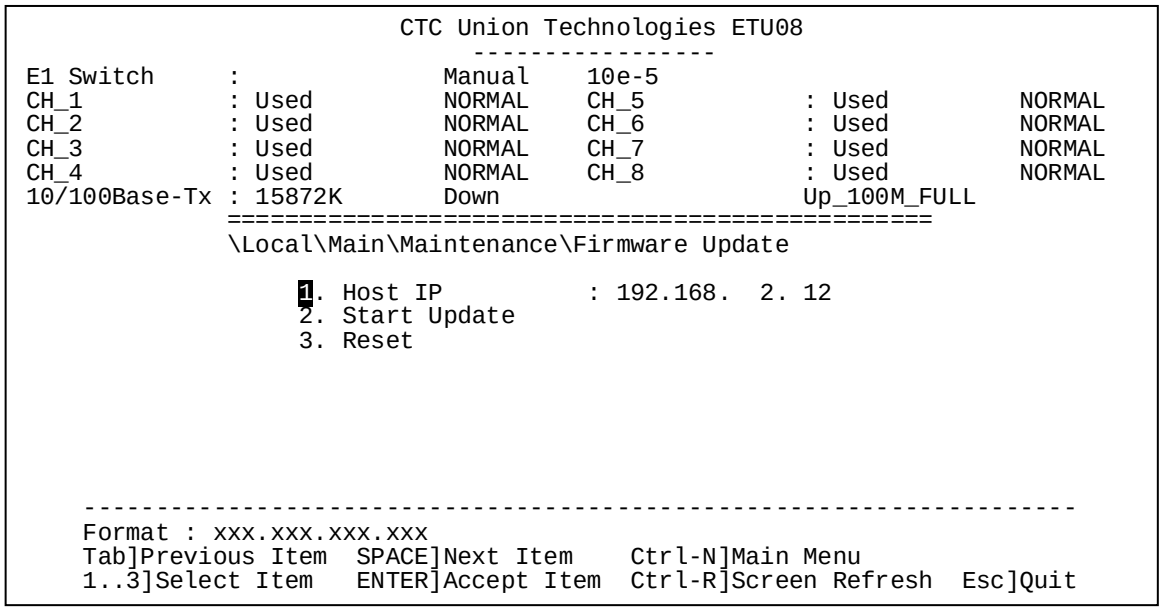

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\Maintenance\Firmware Update
1. Host IP : 192.168. 2. 12
2. Start Update
3. Reset
Format : xxx.xxx.xxx.xxx
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..3]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 5.4 Firmware Update

◆	To perform upgrade	
	■	Move cursor to **1. Host IP** and specify the IP address of TFTP Server.
		Note: TFTP Server is your PC and the ETU08 device is the client.
	■	Move cursor to **2.Start Update** , press **Enter.** “Are you sure to update the firmware? (Y/N) “ message prompt will be displayed. Confirm proceeding with update with Y. Wait for a moment, you will see the successful information:” Download succeeded! Please restart the system! Press any key to continue…”
	■	Move cursor to **3.Reset** ,and press **Enter** to restart the system.
	■	When update has completed, verify that the new firmware version number is shown accordingly.

5.4 Displaying Identity Information

The Inventory Screen provides identity information for the unit's services and revision state.
To access this information, apply the menu selection sequence: **Local >> Main >> Maintenance >> Inventory** as shown below.

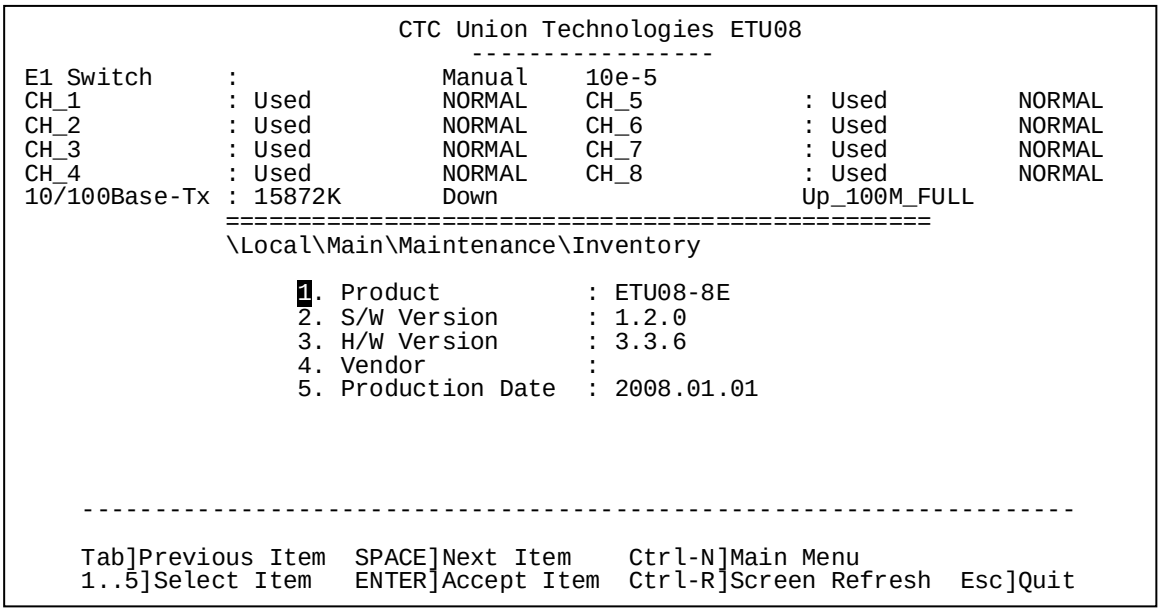

CTC Union Technologies ETU08
E1 Switch : Manual 10e-5
CH_1 : Used NORMAL CH_5 : Used NORMAL
CH_2 : Used NORMAL CH_6 : Used NORMAL
CH_3 : Used NORMAL CH_7 : Used NORMAL
CH_4 : Used NORMAL CH_8 : Used NORMAL
10/100Base-Tx : 15872K Down Up_100M_FULL
\Local\Main\Maintenance\Inventory
1. Product : ETU08-8E
2. S/W Version : 1.2.0
3. H/W Version : 3.3.6
4. Vendor :
5. Production Date : 2008.01.01
Tab]Previous Item SPACE]Next Item Ctrl-N]Main Menu
1..5]Select Item ENTER]Accept Item Ctrl-R]Screen Refresh Esc]Quit

Figure 5.4: Identity Menu

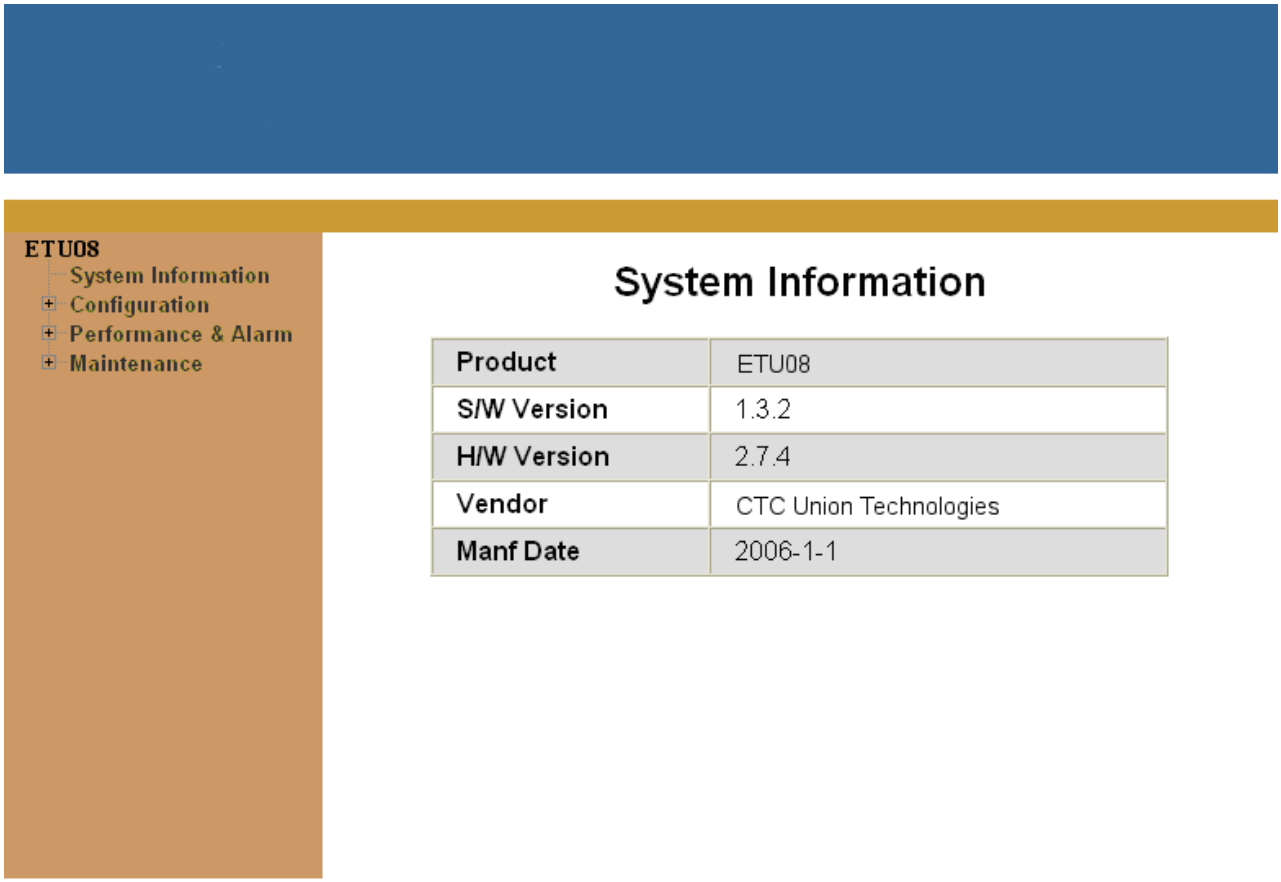
	Item	Description
1	Product	: Displays the product name of the unit.
2	S/W Version	: Displays the software version currently used for the unit.
3	H/W Version	: Displays the hardware version of circuitry.
4	Vendor	: Displays the name of vendor making this unit.
5	Manf Data	: Displays the date that the unit was manufactured.

6. Using Web Based Configuration

6.1 Login

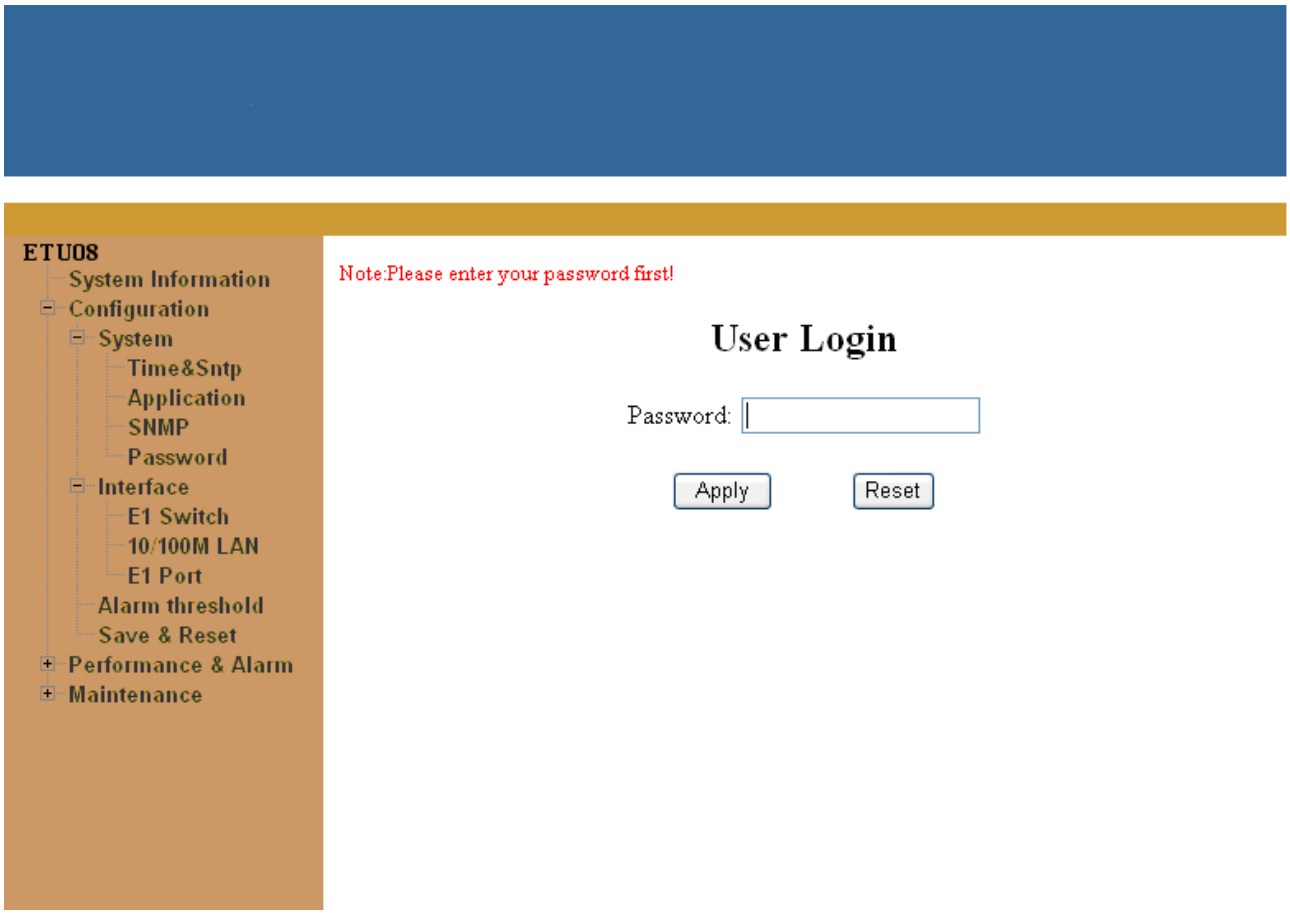
To access the Web Utility,

- Make sure your PC can ping the ETU08 that you want to connect. By default, the IP address of ETU08 is 192.168.2.102.
- Open the Web browser, and type the IP address in the address field of the browser as exampled: **http://192.168.2.102** and then press **<Enter>** to connect.
- You will get the **System Information** webpage as the screenshot below, which shows the system information read-only, such as Product Name, S/W Version, H/W Version, Vendor and Manf Date.



On each Web Menu, there are two areas to illustrate:	
Menu Tree:	On the left side of the Web Menu is the menu tree.
Main Menu:	The remaining area of Web Menu provides fields for configuration, specific to each node of menu tree, and displays prompt or Performance & Diagnostic data.

- If you want to get more information or to do some configuration, click a node on the menu tree left randomly, you will get the **User Login** page as below.
  Note: The default password is **admin.**Type in the password, then **Apply** ,you will back to the **System Information** page.Then you can access every node to configure the device.



6.2 Configuration

From menu **Configuration**, you can find four sub menus that are **System**, **Interface**, **Alarm Threshold** and **Save & Reset**

6.2.1 System

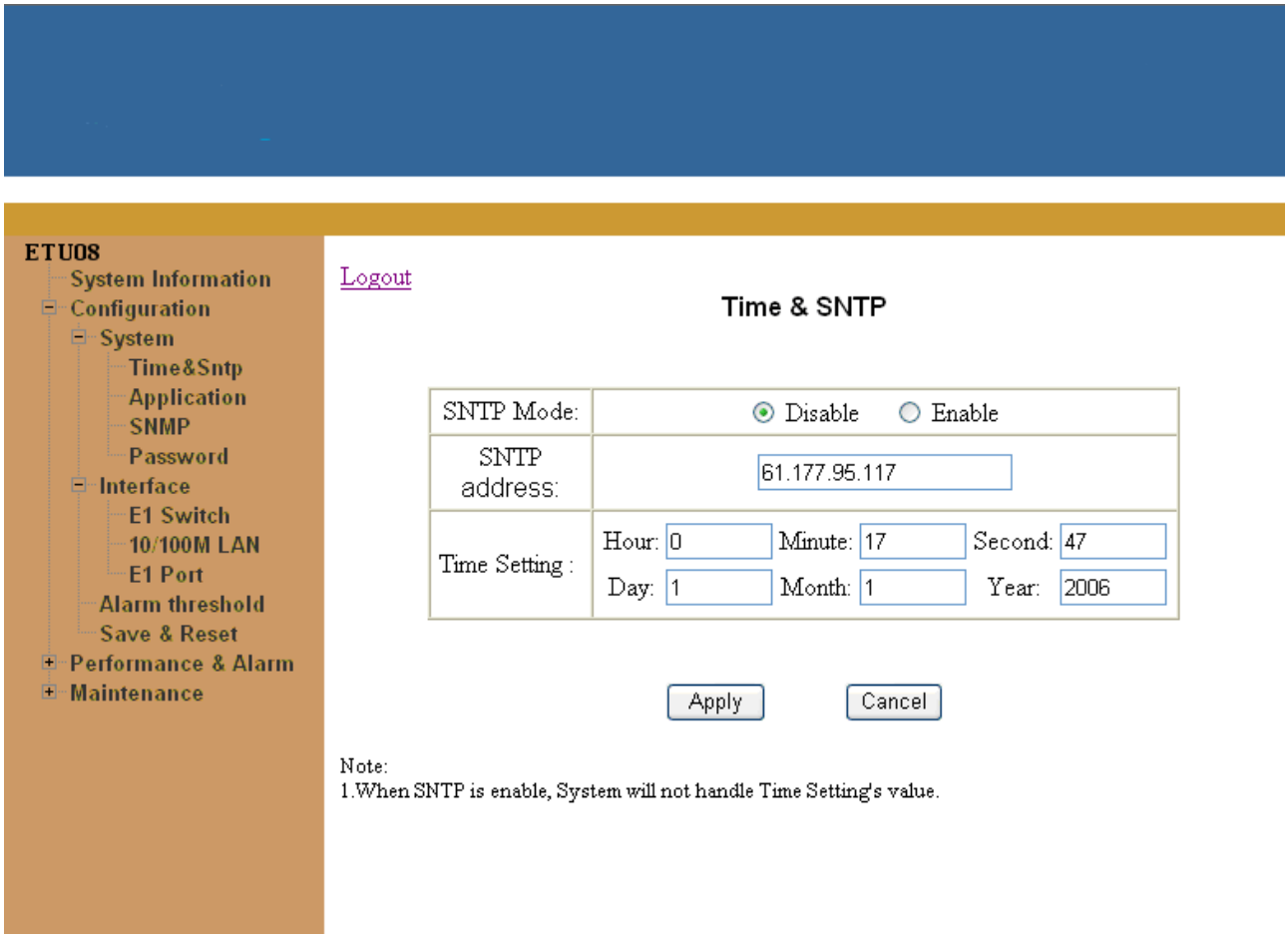
From menu **System,** you can set **Time & SNTP, Application, SNMP** and **Password,** which are the most basic config of the system.

Time & SNTP

When you Enable the **SNTP Mode**, the ETU08 will retrieve the current time from a remote SNTP Server whose IP address is specified in **SNTP address** as below. You can also refer to **Section 3.4.1** and **3.4.2.**

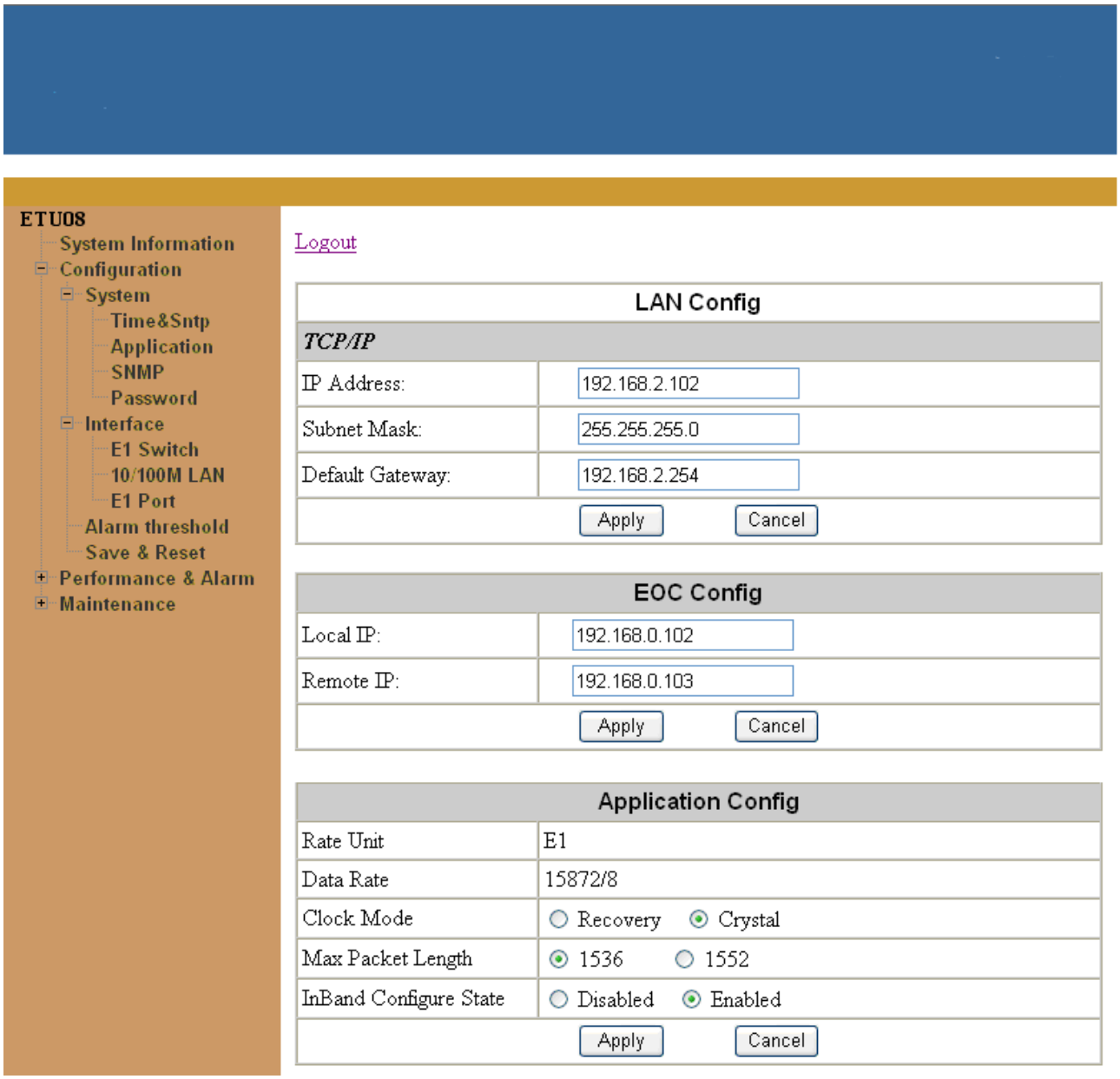
When you Disable the **SNTP Mode**, you will have to specify the Time by yourself in **Time Setting.**

Note: When SNTP is enable, System will not handle Time Setting's value.



Application

From **Application** menu, you can do **LAN Config**, **EOC Config** and **Application Config**.Details as below, and you can also refer to **Section 3.4.3**, **Section 3.4.5** and **Section 3.4.7**



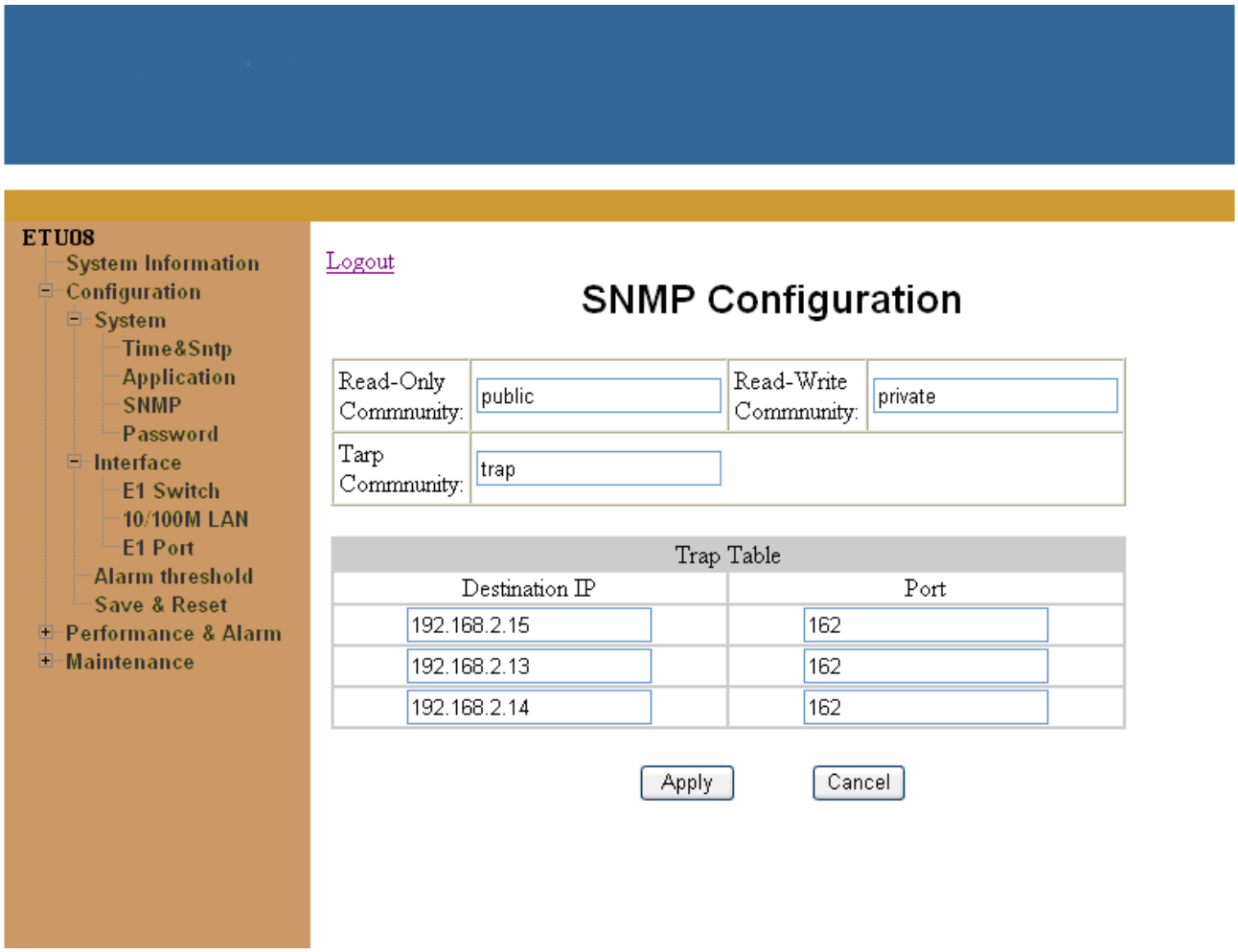
LAN Config	
IP Address	Specify IP address for the LAN interface.
Subnet Mask	Type the proper Subnet Mask
Default Gateway	Specify the Next hop IP address in the “ Gateway Addr. “ field

EOC Config	
Local IP	Specify the IP address of the local ETU08
Remote IP	Specify the IP address of the remotely connected ETU08.

Application Config	
Rate Unit	E1, read-only
Data Rate	Read-only
Clock Mode	Specify the Clock Mode to be Crystal or Recovery
Max Packet Length	Specify Max Packet Length to be 1536 or 1552
InBand Configure State	Enable or disable InBand Configure State

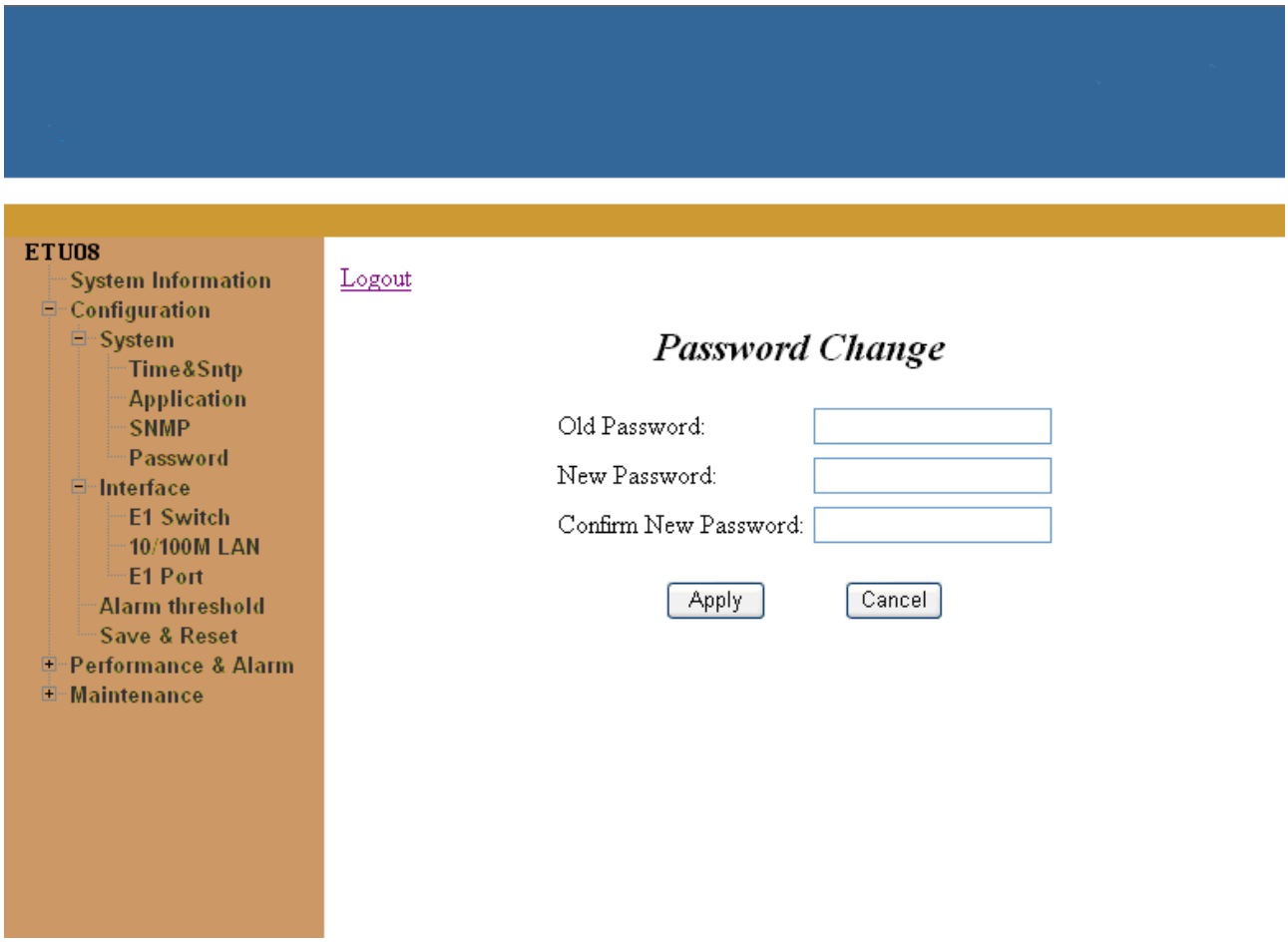
SNMP

Details see **Section 3.4.4**



Password

This Menu allows you to configure or change the user password of the ETU08.
Note that the default password is “admin”, and the password length must <= 20

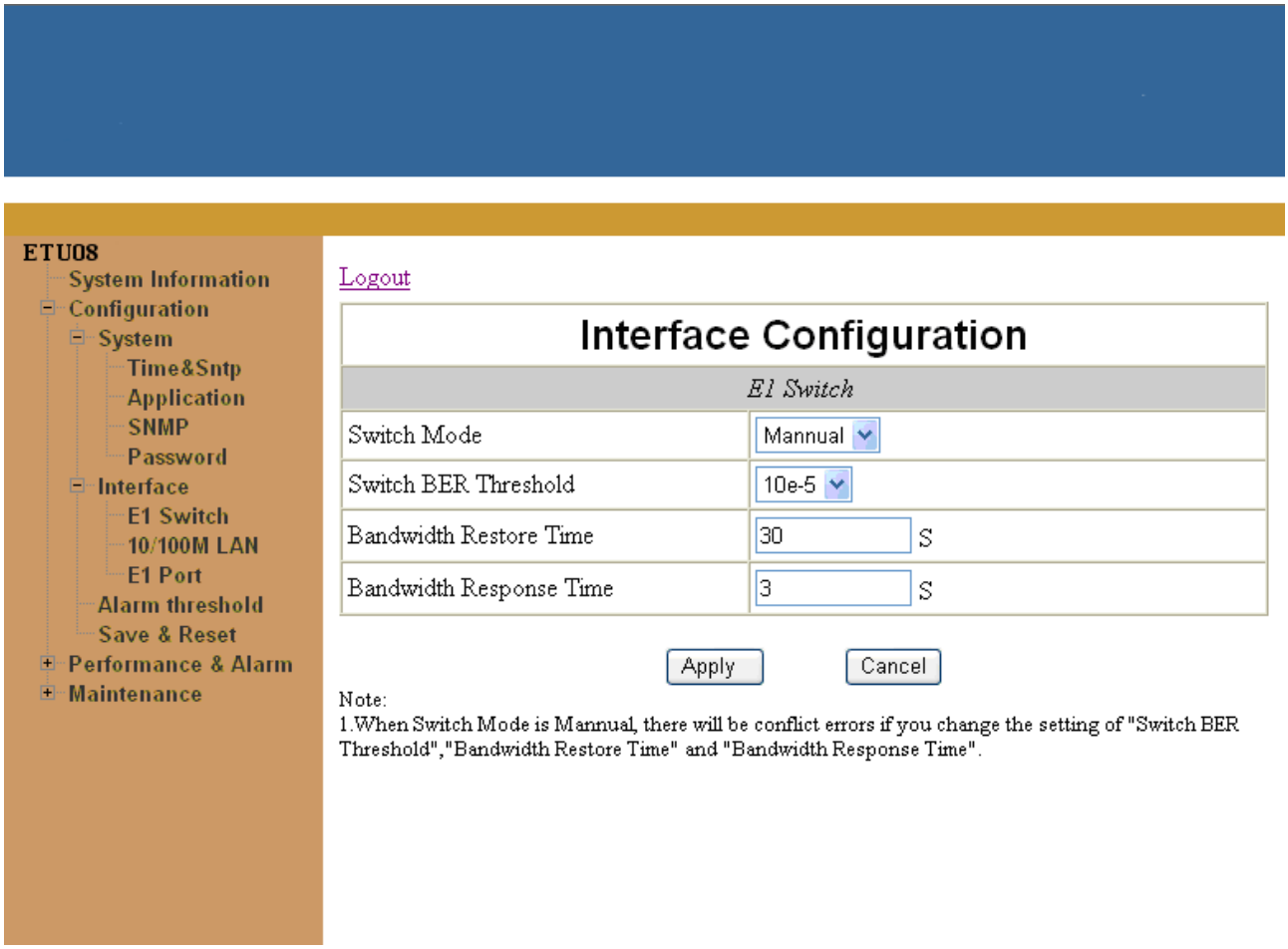


6.2.2 Interface

From menu **Interface,** you can set **E1 Switch, 10/100M LAN** and **E1 Port.**

E1 Switch

Details see **Section 3.5.4.**
Note: When Switch Mode is Mannual, there will be conflict errors if you change the setting of "Switch BER Threshold","Bandwidth Restore Time" and "Bandwidth Response Time".



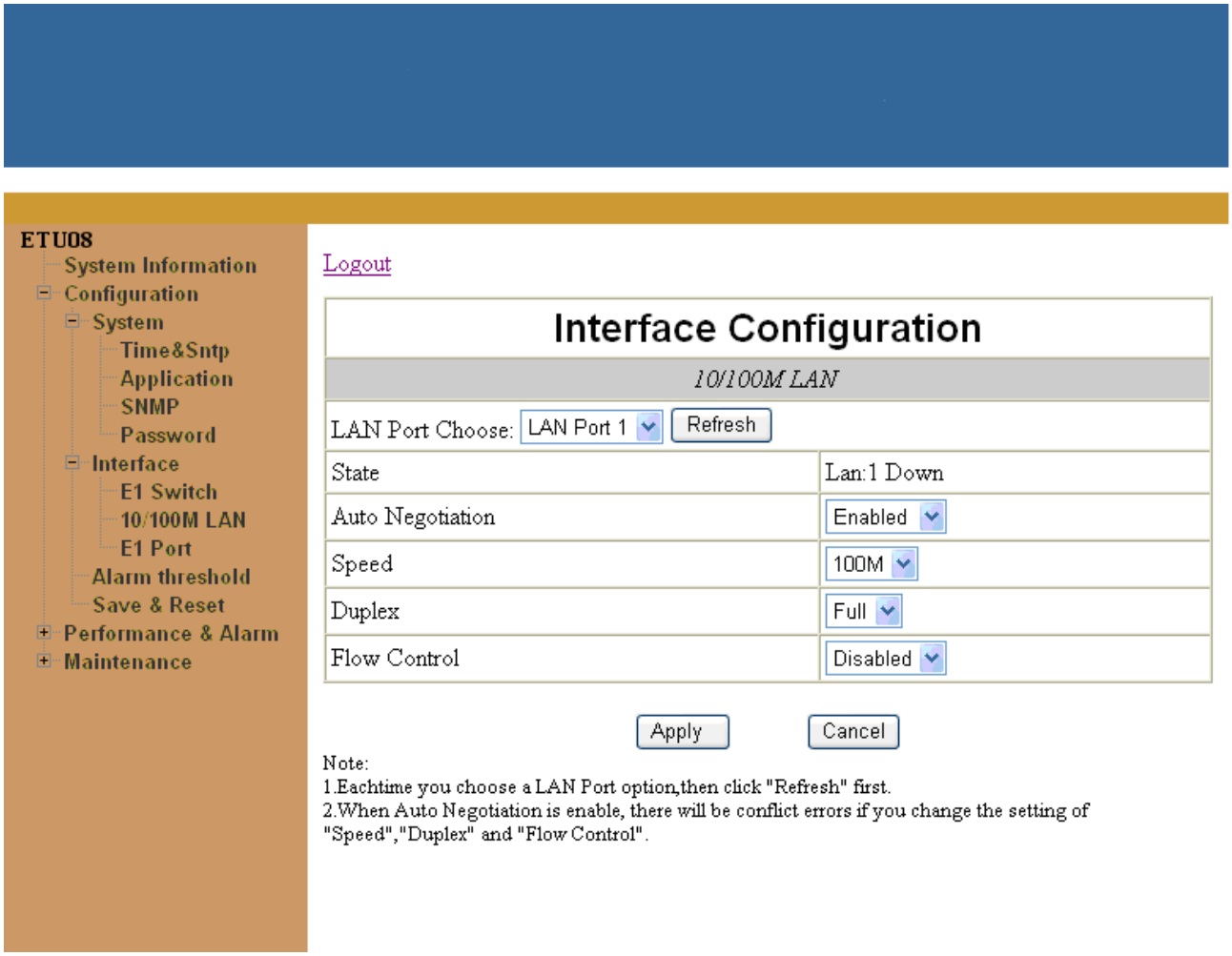
10/100M LAN

Details see **Section 3.5.2.**

Note:

1.Each time you choose a LAN Port option,then click "Refresh" first.

2.When Auto Negotiation is enable, there will be conflict errors if you change the setting of "Speed","Duplex" and "Flow Control".



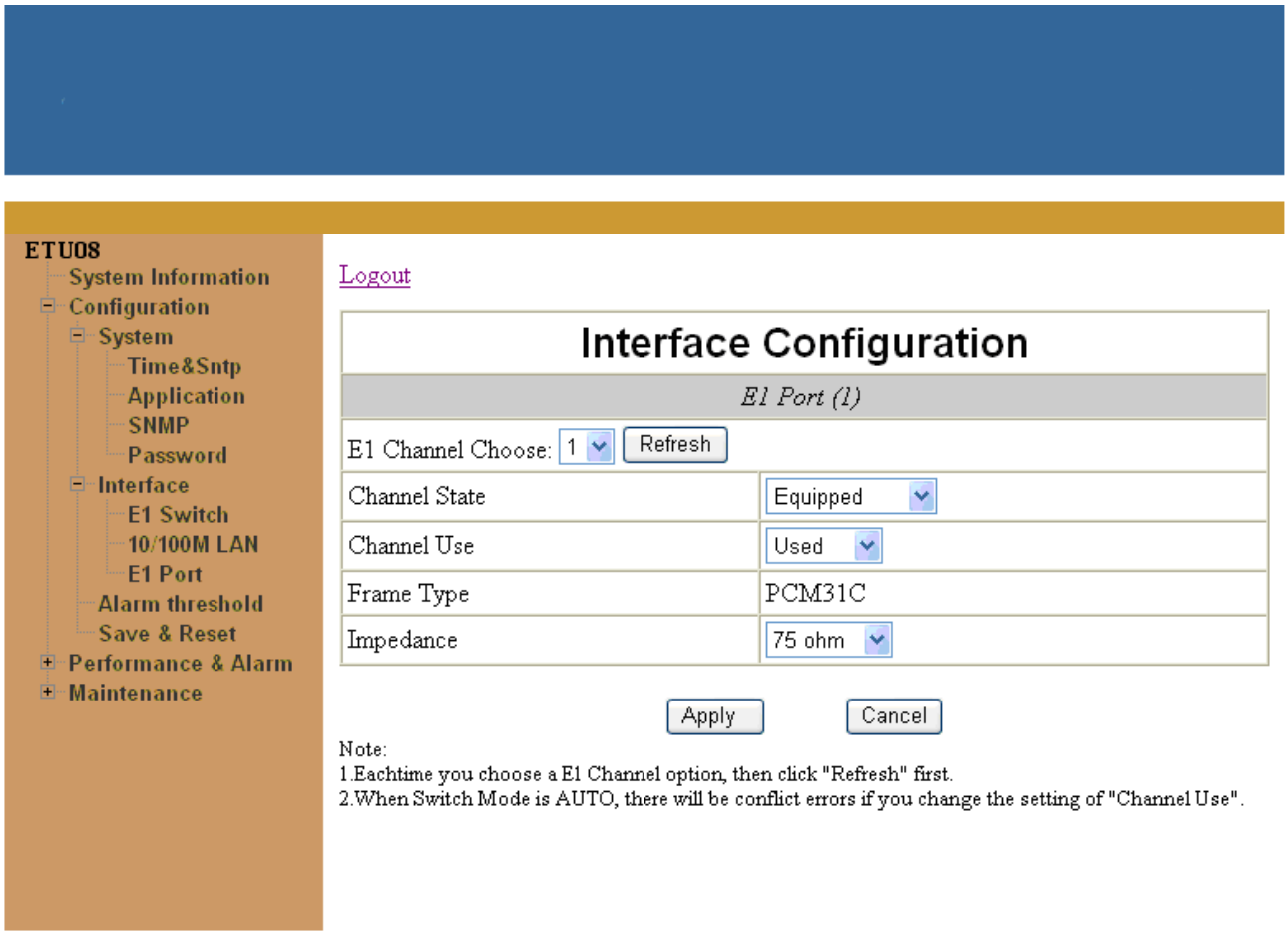
E1 Port

Details see **Section 3.5.1.**

Note:

1.Each time you choose a E1 Channel option, then click "Refresh" first.

2.When Switch Mode is AUTO, there will be conflict errors if you change the setting of "Channel Use".

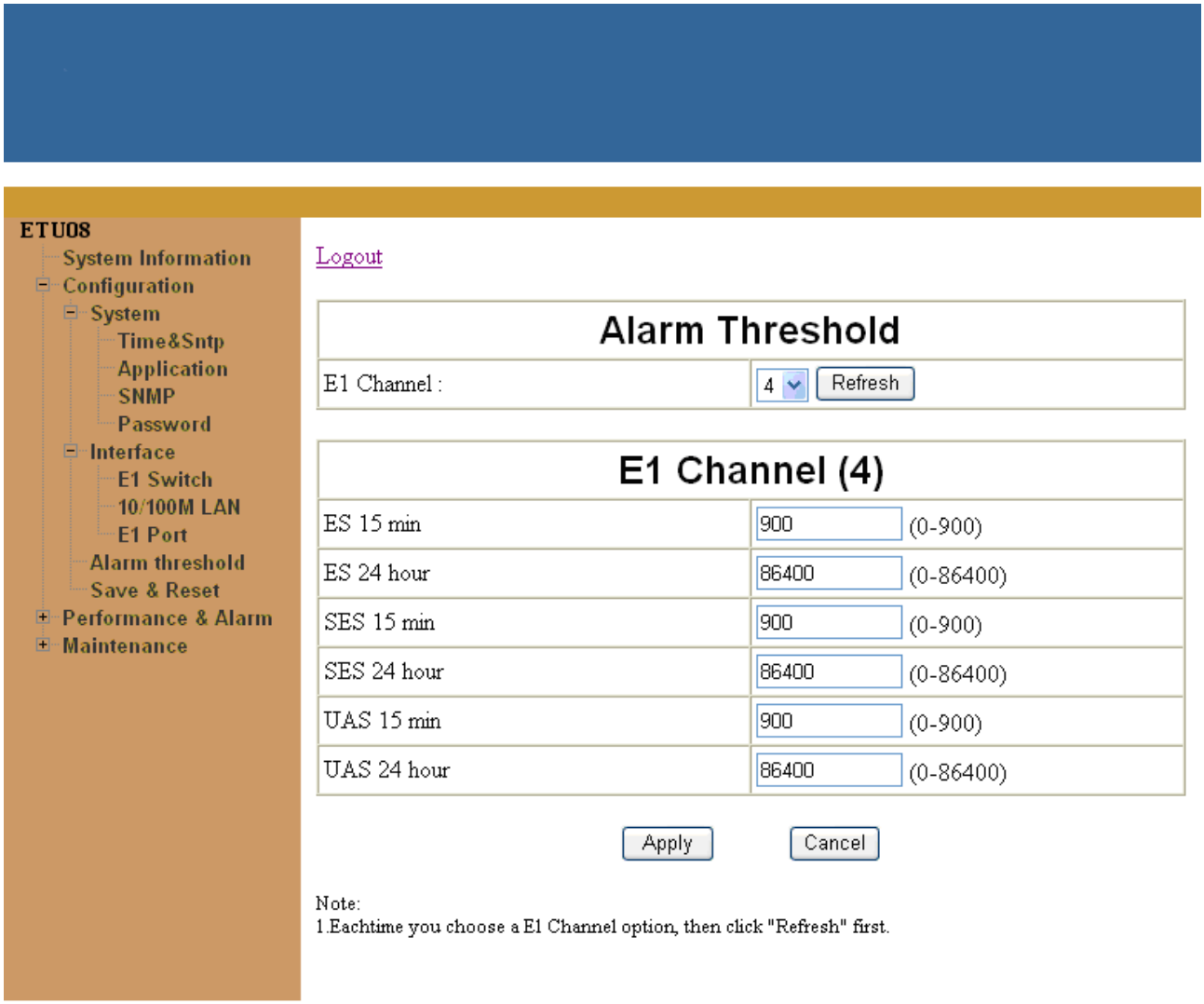


6.2.3 Alarm Threshold

Details see **Section 3.6.**

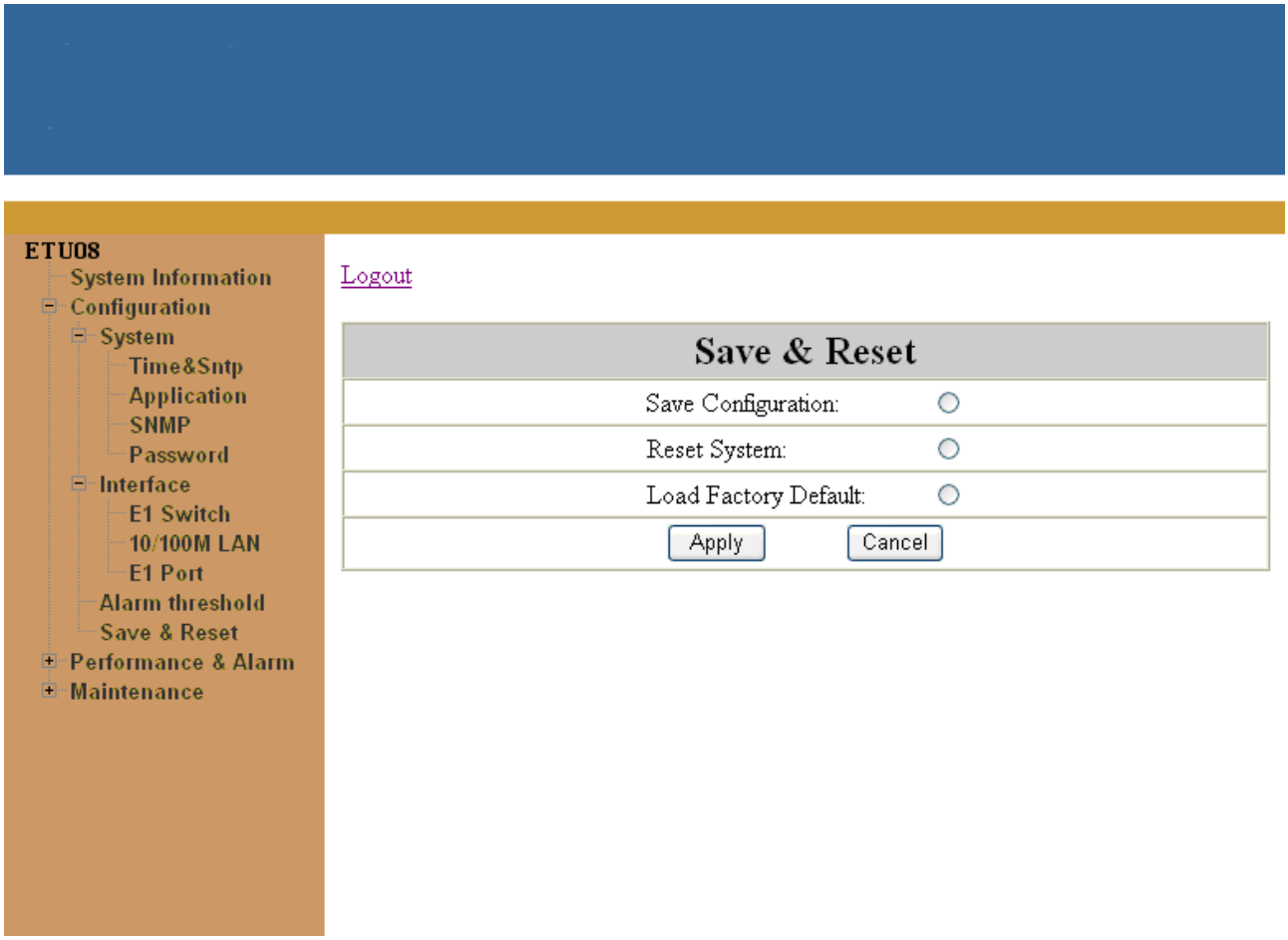
Note:

Each time you choose a E1 Channel option, then click "Refresh" first.



6.2.4 Save & Reset

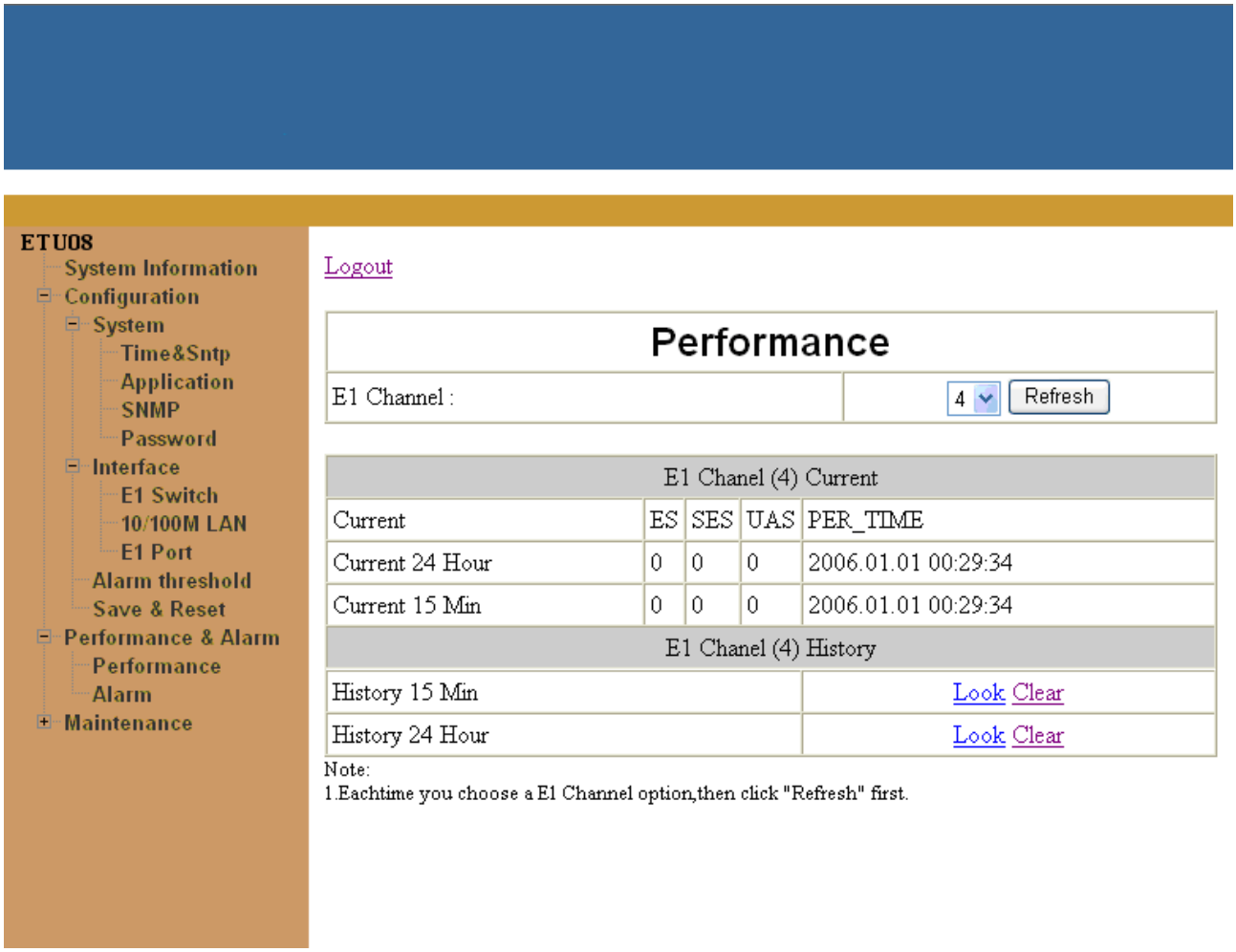
From this page , you can **Save Configuration**, **Reset System**, **Load Factory Default** by Apply after choosing the corresponding option respectively.



6.3 Performance & Alarm

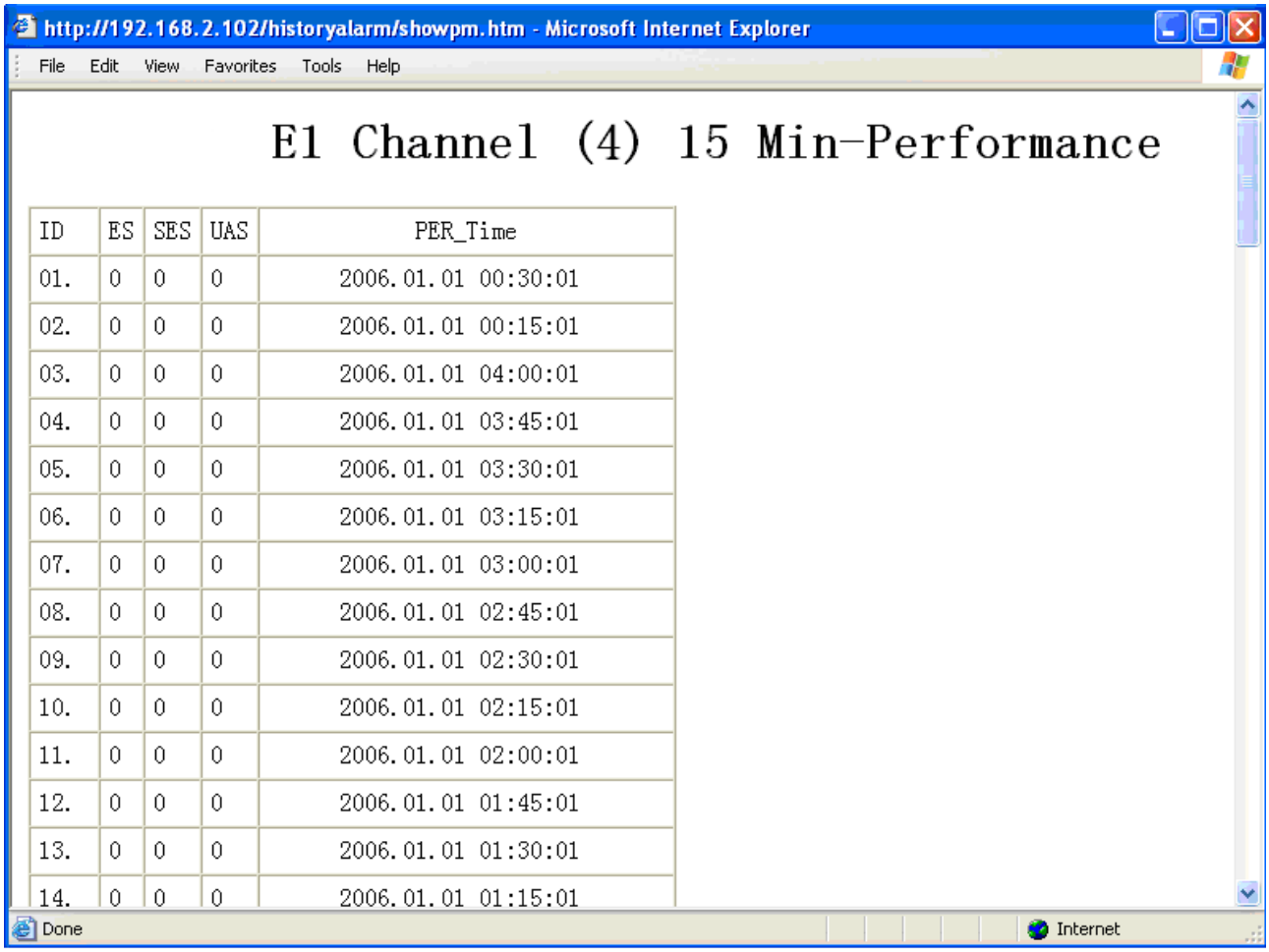
6.3.1 Performance

From this menu, you can see the **Current 24 Hour**, Current 15 Min.



And click **Look** to see **History 15 Min(see the screenshot as below)** and **History 24 Hour,** Click **Clear** to clear the **History 15 Min** and **History 24 Hour.**

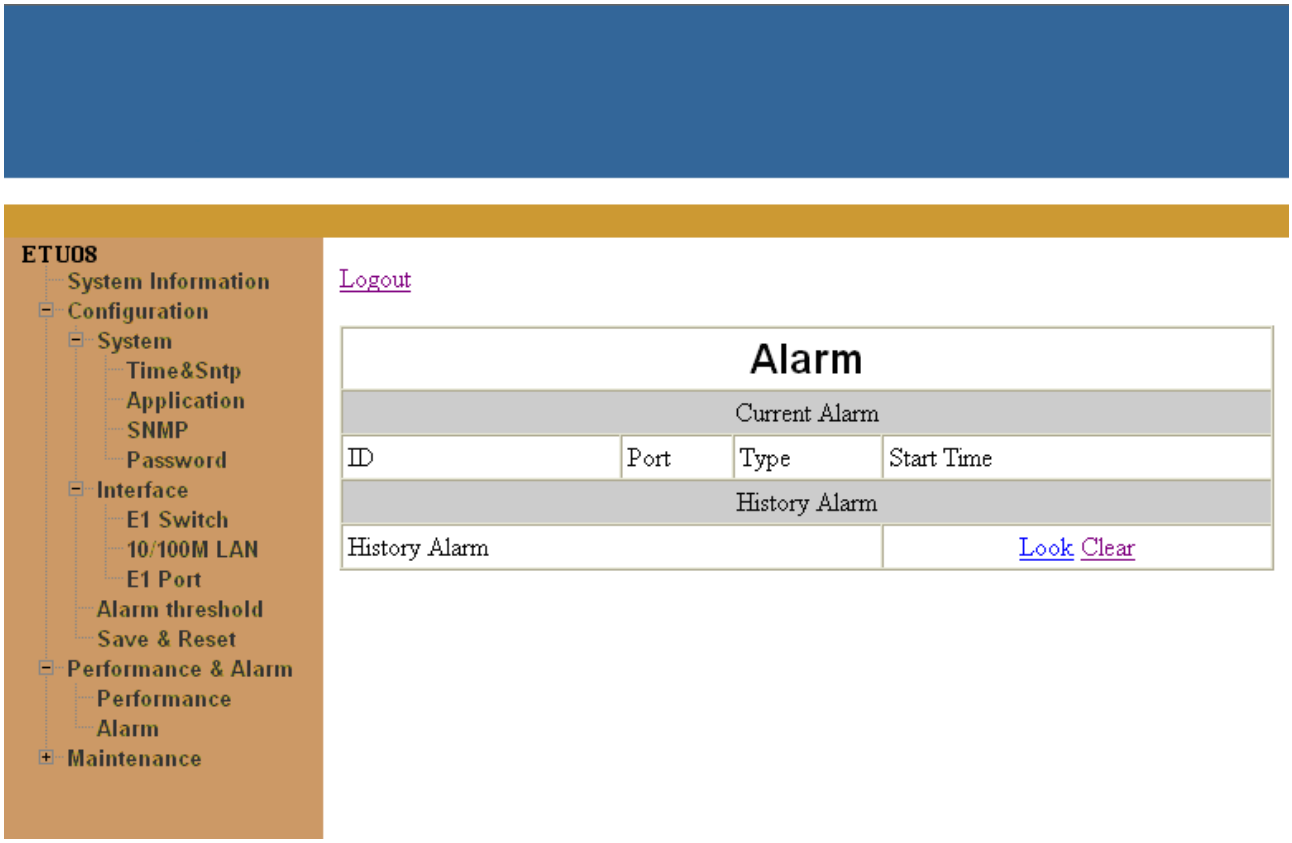
Note :
Each time you choose a E1 Channel option,then click "Refresh" first.

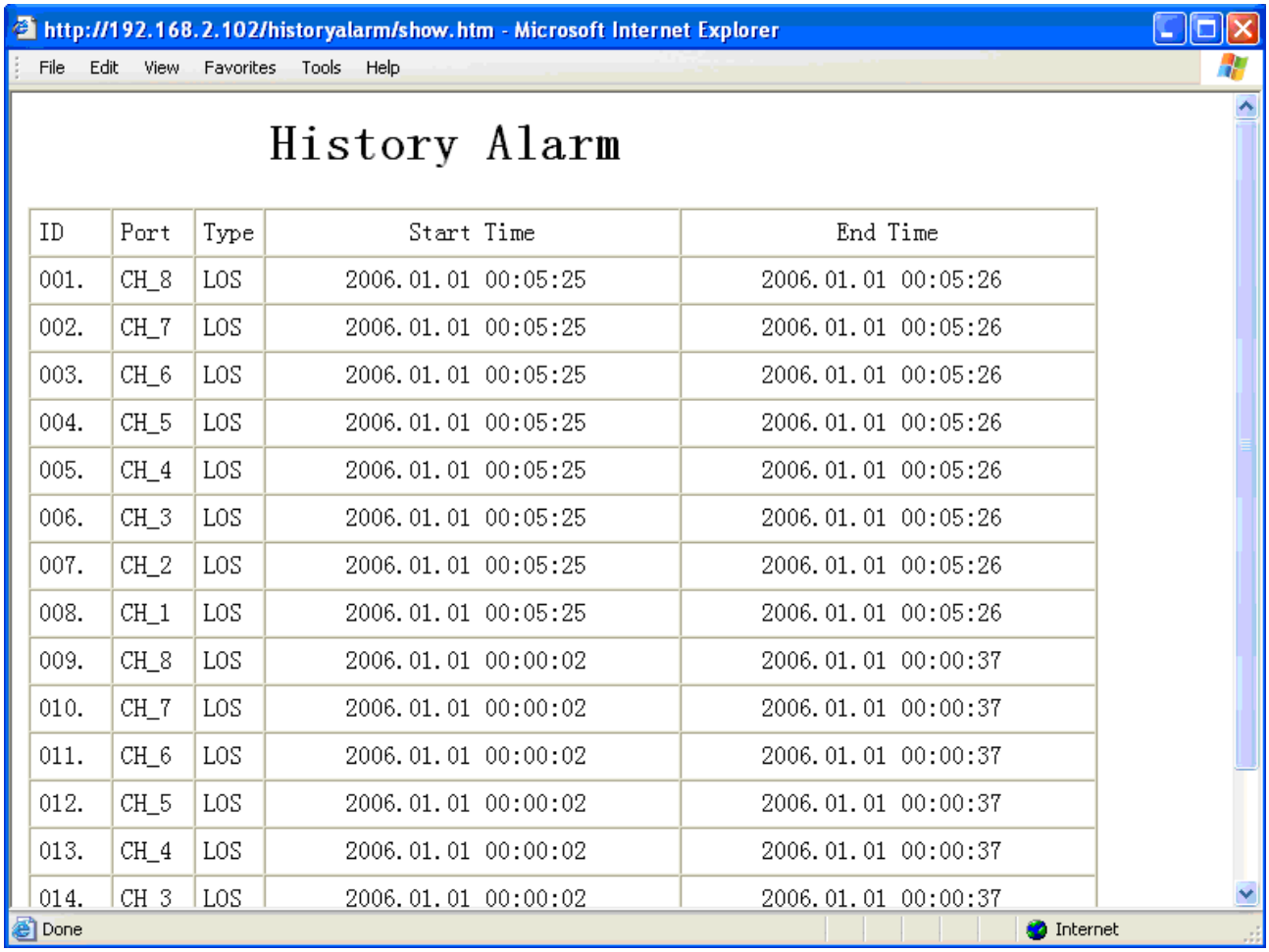


ID	ES	SES	UAS	PER_Time
01.	0	0	0	2006.01.01 00:30:01
02.	0	0	0	2006.01.01 00:15:01
03.	0	0	0	2006.01.01 04:00:01
04.	0	0	0	2006.01.01 03:45:01
05.	0	0	0	2006.01.01 03:30:01
06.	0	0	0	2006.01.01 03:15:01
07.	0	0	0	2006.01.01 03:00:01
08.	0	0	0	2006.01.01 02:45:01
09.	0	0	0	2006.01.01 02:30:01
10.	0	0	0	2006.01.01 02:15:01
11.	0	0	0	2006.01.01 02:00:01
12.	0	0	0	2006.01.01 01:45:01
13.	0	0	0	2006.01.01 01:30:01
14.	0	0	0	2006.01.01 01:15:01

6.3.2 Alarm

In this page, click **Look** to see the **History Alarm**, and click **Clear** to clear the **History Alarm.**

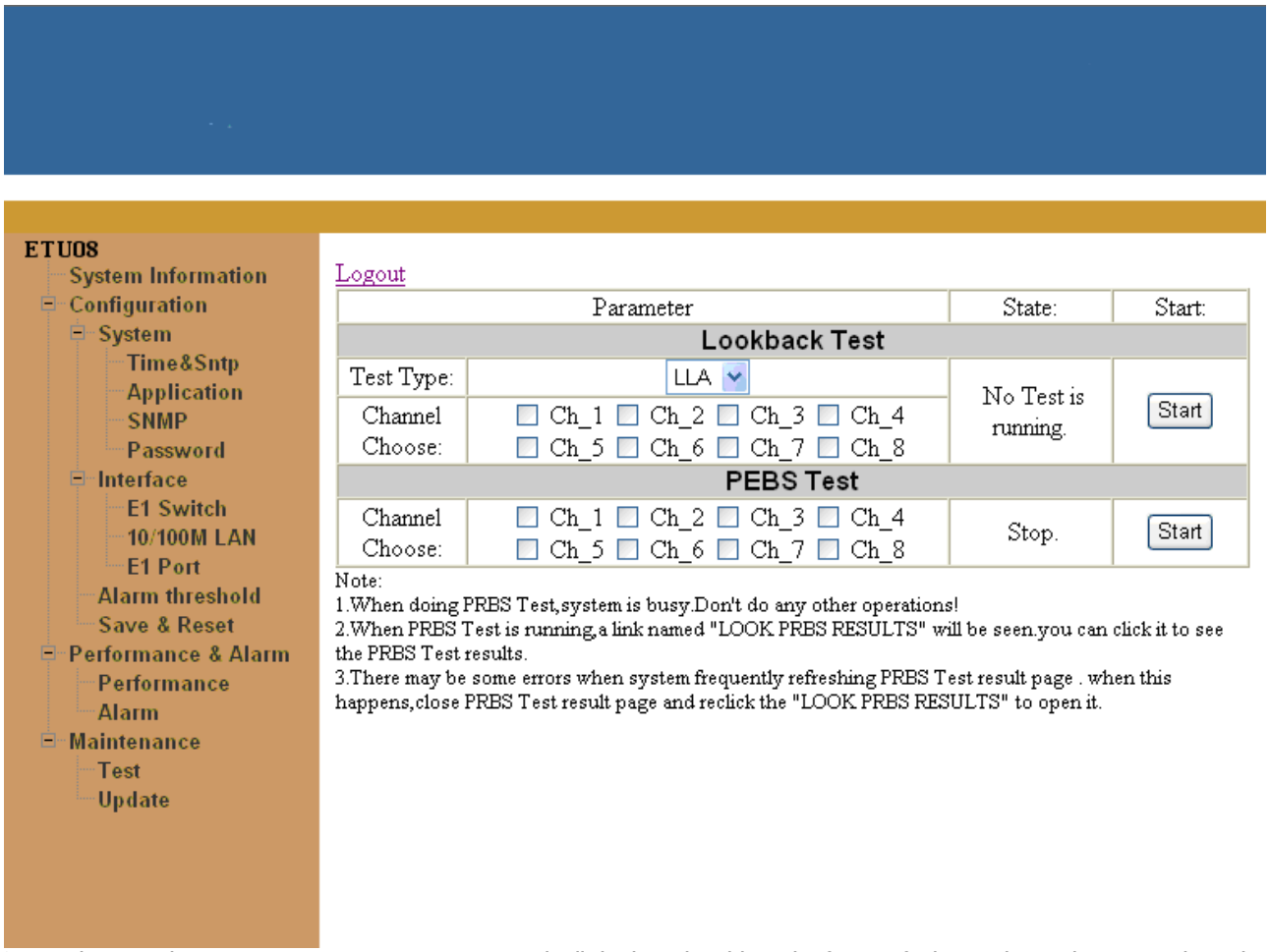




ID	Port	Type	Start Time	End Time
001.	CH_8	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
002.	CH_7	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
003.	CH_6	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
004.	CH_5	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
005.	CH_4	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
006.	CH_3	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
007.	CH_2	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
008.	CH_1	LOS	2006.01.01 00:05:25	2006.01.01 00:05:26
009.	CH_8	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37
010.	CH_7	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37
011.	CH_6	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37
012.	CH_5	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37
013.	CH_4	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37
014.	CH_3	LOS	2006.01.01 00:00:02	2006.01.01 00:00:37

6.4 Maintenance

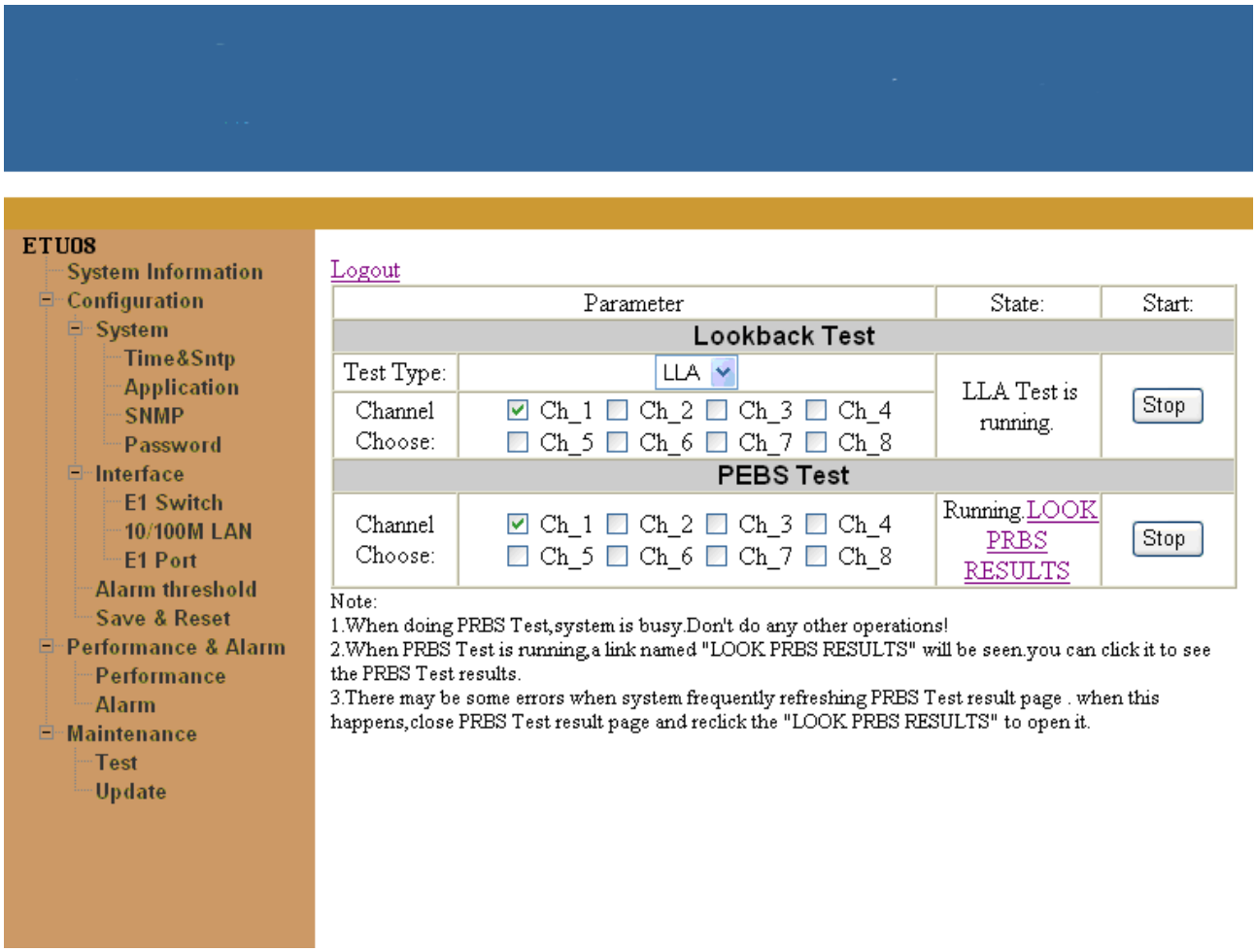
6.4.1 Test



- Choose the Test Type, LLA or RLA, and click the checkbox in front of channel number to select the channels you want to test, then click the first **Start** button to start Loopback test
- The same method to select channels in PRBS section, then click the second **Start** button to start PRBS test.

Note:
1.When doing PRBS Test,system is busy.Don't do any other operations!
2.When PRBS Test is running,a link named "LOOK PRBS RESULTS" will be seen. You can click it to see the PRBS Test results.

See the screenshot below.



3.There may be some errors when system frequently refreshing PRBS Test result page. When this happens, close PRBS Test result page and click the "LOOK PRBS RESULTS" again to reopen it.

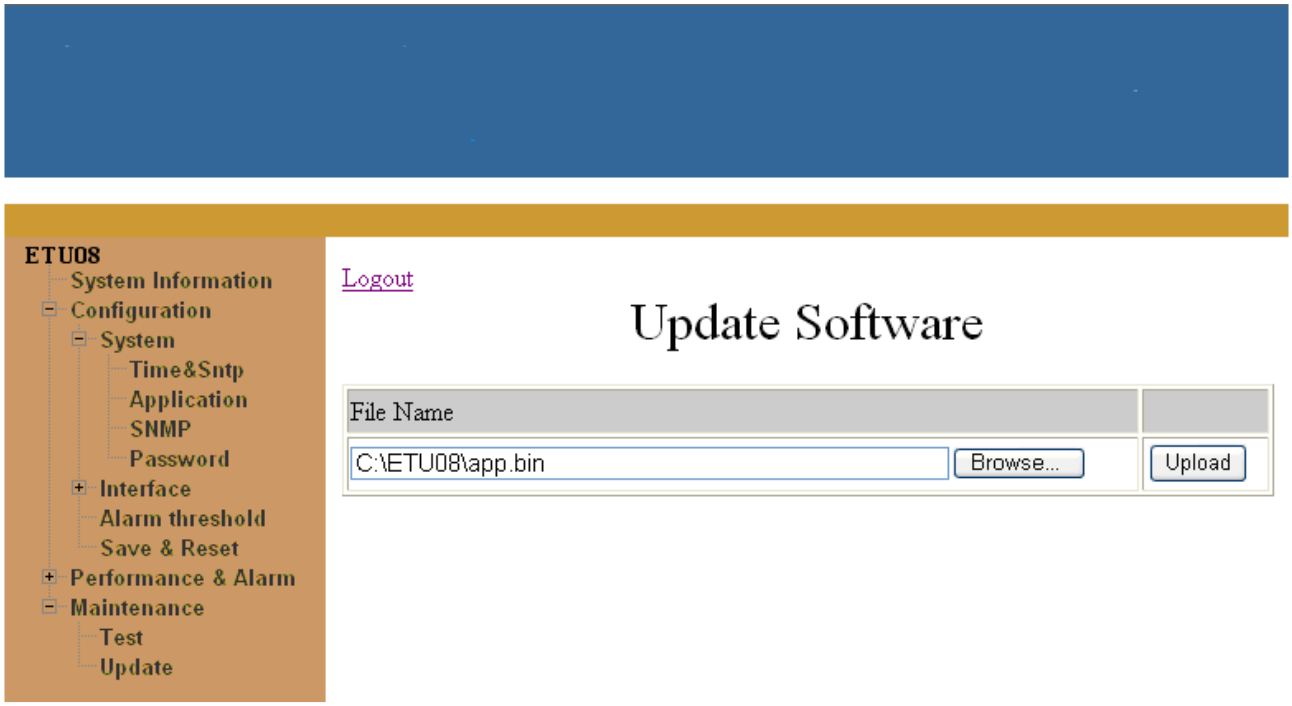
PRBS TESTING	
CHANNEL	BER
Time:0042s	
CH:1	0.0e-0
CH:2	No test
CH:3	No test
CH:4	No test
CH:5	No test
CH:6	No test
CH:7	No test
CH:8	No test

close

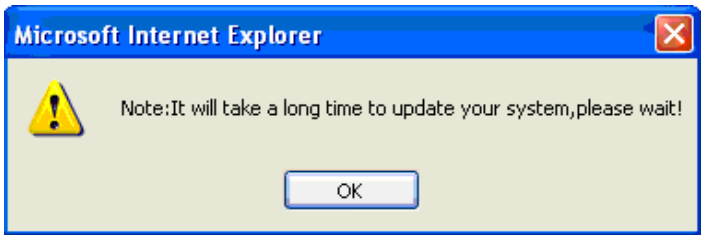
6.4.2 Update (Recommended)

From **Update** menu, you can update firmware very conveniently

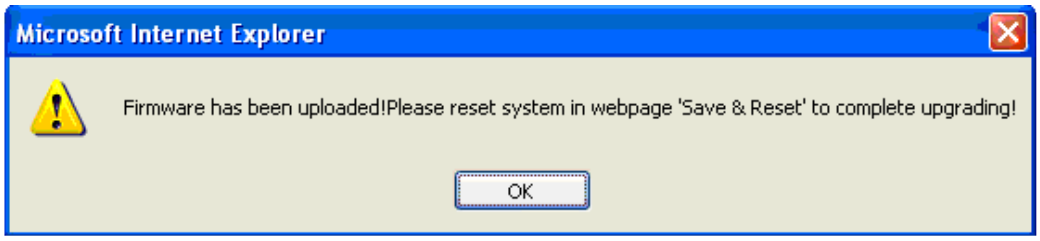
- Choose the firmware file in **Browse…**

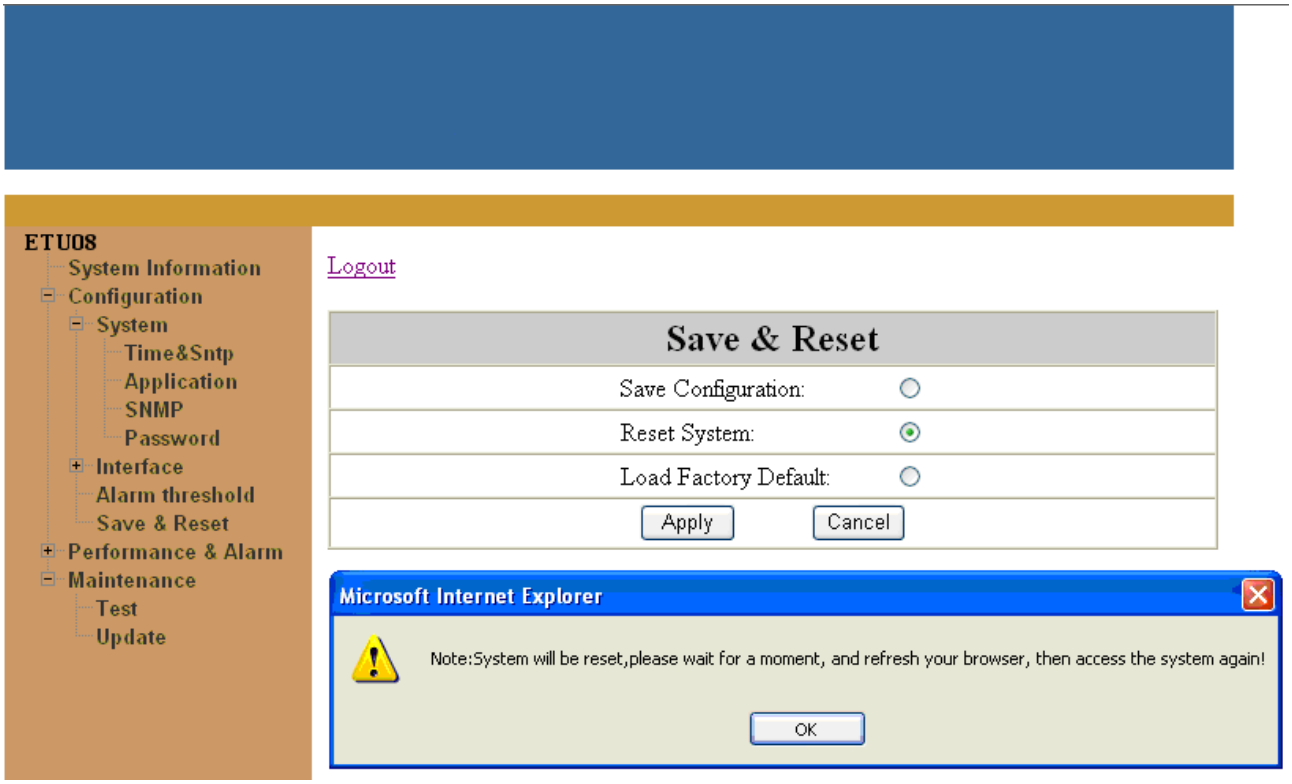


- Click the **Upload** button, you will get the prompt “Are you sure to update?” .Click **OK,** it will prompts you again illustrated below.



- Once the firmware has been uploaded, there will be another prompt, please reset system as prompted!


Microsoft Internet Explorer
Firmware has been uploaded!Please reset system in webpage 'Save & Reset' to complete upgrading!
OK



- After reset the system, please wait for a moment, and refresh your browser, then access the system again!

Appendix A

As depicted in Section 2.1" Front Panel ", the pin-outs for E1, LAN connectors are illustrated in the following tables.

A.1 E1 Signal Pin-out

When connecting balanced E1 equipment, make sure to use the 4-wire RJ-48C connectors with the following pins out for receiving and transmitting data.

Table A.1 describe pin out and connector for E1/T1 ports.

Table A.1: Pin out of the E1 RJ-48C Connector

Pin No	Function	Data Direction	Designation
1	RX Receiving Data	Toward the user DTE	RX- Ring
2	RX Receiving Data	Toward the user DTE	RX-Tip
4	TX Transmitting Data	Toward the network	TX- Ring
5	TX Transmitting Data	Toward the network	TX- Tip

A.2 RJ-45 wire numbering

To determine the wire numbering for 10/100 Base-Tx, hold the RJ45 cable, so that the copper side faces up, the clip faces downward and is as illustrated in Figure A.2 when looking down on the copper side, wire number 1 will be on far right, where wire number 8 on far left.

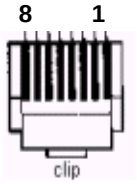


Figure A.2: RJ-45 Connector

Pin NO.	Function	Data Direction	Designation
1	TX Transmitting Data	Toward the LAN network	TX+
2	TX Transmitting Data	Toward the LAN network	TX-
3	RX Receiving Data	Toward the LAN Equipment	RX+
6	RX Receiving Data	Toward the LAN Equipment	RX-

Table A.2 10/100 Base-TX Pin-out

CTC union

www.ctcu.com

T +886-2 2659-1021 F +886-2 2659-0237 E info@ctcu.com

ISO 9001 Quality System Certified CTC Union Technologies Co.,LTD.

All trademarks are the property of their repective owners. Technical information in this document is subject to change without notice.